



BLUE ROCK
ENVIRONMENTAL, INC.

FILE COPY

Mr. Mark Verhey
Humboldt County Health Department
Division of Environmental Health
100 H Street, Suite 100
Eureka, California 95501

December 6, 2005

**Re: Fourth Quarter 2005 Groundwater Monitoring Report
Elliott's Service Center (former)
761 Eel River Drive, Loleta, CA
HCDEH LOP No. 12210
Blue Rock Project No. NC-2**

Dear Mr. Verhey,

This report presents the results of the fourth quarter 2005 groundwater monitoring activities at former Elliott's Service Center, 761 Eel River Drive, Loleta, Humboldt County, California (site) (Figure 1), and was prepared for Mr. Ken Elliott by Blue Rock Environmental, Inc. (Blue Rock).

Background

Site Description

The site is located on the eastside of the Eel River Drive on the western side of the unincorporated town of Loleta, California (Figure 1). The site is relatively flat and slopes gently to the west. The site is surrounded by residential properties to the north, east, and south. The west side of the property is primarily farmland with dispersed residences.

UST History

The service station was built in 1927 and has been owned and operated by several different parties until Mr. Elliot purchased the property from the Bank of Loleta in 1989. Since Mr. Elliot purchased the property, the site has operated as Elliott's Service Center, which retails gasoline and services automobiles.

On December 18, 1989, one 1,000-gallon gasoline underground storage tank (UST) (Tank #1), one 250-gallon diesel UST (Tank #2), and one 2,000-gallon gasoline UST (Tank #3) were removed from a common excavation, and one 550-gallon diesel UST (Tank #4) was removed from a separate excavation (Figure 2). The tanks were removed from the site at the locations shown on Figure 2. Alpha Construction of Eureka, California performed the tank removal. Mr. Kevin Metcalfe of the Humboldt County Division of Environmental Health (HCDEH) observed the tank removal. Jim Roby, from Alpha Construction, collected five soil samples and two water samples from the excavations. The depths of the soil samples were between 6 and 8 feet bgs. Mr. Metcalfe noted that groundwater was present in the excavations at a depth of approximately 8 feet. Laboratory analysis of the samples found gasoline range hydrocarbon contamination in

the soil and groundwater samples collected from both excavations. Upon removal of the tanks, Mr. Elliott replaced the fuel system with the 5,000-gallon aboveground storage tank (AST) currently located onsite and used to dispense fuel.

Summary of Investigation Activities

Subsurface investigation has been underway at the site since 1996. A total of approximately 11 temporary borings have been drilled for the purpose of soil and groundwater characterization. A total of 10 shallow monitoring wells (MW-1 through MW-10) have been installed at the site. The locations of all investigation points are shown on Figure 2. Cumulative monitoring well groundwater elevations and sample data are included in Table 1, intrinsic bioremediation data are included in Table 2, and well construction data are included in Table 3.

Summary of Contaminant Type

The contaminants which appear to have been released to the subsurface from the former sources consist of petroleum hydrocarbons. Specific compounds or compound groups which have been consistently detected include TPHg, BTEX, and MTBE. Other fuel oxygenates and TPHd have also been detected at the site.

Summary of Hydrogeology

The subsurface consists mostly of elastic silt (MH) and silt (ML) to a depth of at least 25 feet bgs (the greatest depth explored). Groundwater is generally first encountered and stabilizes around depths of 12 to 17 feet bgs. Groundwater elevations fluctuate with seasonal precipitation, they rise after the winter rains begin and fall after the rains cease, with annual fluctuations up to approximately four feet. Despite the seasonal fluctuations in groundwater elevations, flow direction is consistently to the west-southwest at gradients on the order of 0.01 to 0.04 ft/ft.

Summary of Sorbed-Phase Contamination

The vertical and lateral extent of sorbed-phase contaminants is well understood. In general, residual sorbed-phase contamination remaining after the remedial excavation in 2003 extends westward from the west wall of the excavation. The maximum residual sorbed-phase concentrations are: 200 mg/kg TPHg, 0.21 mg/kg benzene, and 0.1 mg/kg MTBE. Following the remedial excavation, Clearwater Group, Inc. (Clearwater) estimated that only 21 lbs of TPHg remained in the sorbed-phase.

Summary of Dissolved-Phase Contamination

The extent of residual dissolved-phase contaminants is also well understood. Contaminant concentrations are generally greatest in wells MW-2 and MW-4, which are located immediately downgradient of the former USTs. The most recent maximum dissolved-phase concentrations are: 1,100 µg/L TPHg, 6.3 µg/L benzene, and 9.4 µg/L MTBE (November 2005). Historical monitoring data since 2000, indicate that the plume is stable and not migrating. The plume does not significantly extend off-site.

Summary of Previous Feasibility Testing and Remedial Activities

Previous consultants have demonstrated that the site subsurface is conducive to natural attenuation (please refer to Clearwater's *Corrective Action Plan Addendum, Natural Attenuation Feasibility Study, and Site Conceptual Model Report* dated January 30, 2003).

Summary of Remediation

In December 2003, Clearwater supervised Felt Mountain Construction of Corning, California excavate 613 tons of petroleum contaminated soil located in the vicinity of the former UST fuel system (Figure 2). Based on mass calculations, Clearwater estimated that approximately 323 lbs of sorbed-phase TPHg were removed during remedial excavation activities. Remaining sorbed-phase TPHg was calculated at approximately 21 lbs. This represents over a 93% reduction of sorbed-phase TPHg mass. Remedial activities are detailed in Clearwater's *Remedial Report of Findings*, dated December 31, 2003.

Groundwater Monitoring Field and Laboratory Activities

Groundwater Monitoring Activities

On November 1, 2005, all ten wells (MW-1 through MW-10) were gauged and a select group of wells were monitored (Table 4).

Prior to sampling, an electronic water level indicator was used to gauge depth to water in each well, accurate to within ± 0.01 -foot. All wells were checked for the presence of light non-aqueous phase liquid (LNAPL) petroleum prior to purging. No measurable thicknesses of LNAPL were observed on groundwater in any of the wells. Dissolved oxygen measurements were collected to monitor the effectiveness of the dissolved-phase hydrocarbon cleanup.

In preparation for sampling, the wells were purged of groundwater until sampling parameters (temperature, pH, and conductivity) stabilized.

Following recovery of water levels to approximately 80% of their static levels, groundwater samples were collected from the wells using disposable polyethylene bailers and transferred to laboratory supplied containers. Sample containers were labeled, documented on a chain-of-custody form, and placed on ice in a cooler for transport to the project laboratory.

Purging instruments were cleaned between use by an Alconox[®] wash followed by double rinse in clean tap water to prevent cross-contamination. Purge and rinse water was stored on-site in labeled 55-gallon drums pending future removal and disposal.

Groundwater monitoring and well purging information is presented on Gauge Data/Purge Calculations and Purge Data sheets (attached).

Groundwater Sample Analyses

Groundwater samples were analyzed by Kiff Analytical (Kiff), a DHS-certified laboratory, located in Davis, California, for the following analytes:

- TPHg, BTEX, and MTBE by EPA Method 5030/8260B.

Groundwater Monitoring Results

Groundwater Flow Direction and Gradient

Static groundwater in the wells was present beneath the site at depths ranging from approximately 12.56 (MW-10) to 17.03 (MW-7) feet bgs. Gauging data, combined with well elevation data, were used to calculate groundwater elevation, and to generate a groundwater elevation and gradient map. The groundwater flow direction was calculated to be toward the west-southwest at a gradient of 0.04 ft/ft (Figure 3). The groundwater gradient and flow direction are consistent with previous measurements.

Groundwater Contaminant Analytical Results

| | |
|------------------------|--|
| LNAPL: | None |
| TPHg concentration: | <50 µg/L (MW-1) to 1,100 µg/L (MW-4) |
| Benzene concentration: | <0.50 µg/L (MW-1, MW-2) to 6.3 µg/L (MW-10) |
| MTBE Concentration: | <0.50 µg/L (MW-10) to 9.4 µg/L (MW-2) |
| Dissolved Oxygen: | 5.08 mg/L (MW-1), 6.41 mg/L (MW-2), 3.25 mg/L (MW-4), 5.11 mg/L (MW-9) |

Groundwater sample analytical results are shown graphically on Figures 4a, 4b, and 4c, and cumulative groundwater sample analytical results are summarized in Table 1. Intrinsic bio-remediation data are summarized in Table 2, and summary of well construction details is included in Table 3. Copies of the laboratory report and chain-of-custody form are attached.

Response to HCDEH Site Correspondence Letter dated October 20, 2005

The HCDEH provided the following comment regarding Blue Rock's *Additional Investigation and Third Quarter 2005 Groundwater Monitoring Report* in their October 20, 2005 letter:

"In Table 3, depth water in boring B-10 is recorded at 19.48 feet bgs. The boring log for B-10 shows the bottom of the hole was 18 feet bgs. In Table 3, depth water in boring B-9 is recorded at 12.83 feet bgs. The boring log for B-9 shows depth to water at approximately 9.5 feet bgs. Please submit a revised figure including the corrections to the above discrepancies."

The apparent inconsistencies noted above resulted from that fact that temporary wells B-9, B-10, and B-11 were constructed such that the top of casing extended a couple feet above the ground surface. Table 3 shows depth-to-water as measured relative to top-of-casing elevation (not ground surface). The top-of-casings for B-9, B-10, and B-11 were surveyed relative to existing monitoring wells at the site, therefore, the groundwater elevations calculated by top-of-casing minus measured depth-to-water resulted in comparable groundwater elevation data for the sake of determining groundwater flow. The depth-to-water shown on the boring logs was measured as depth below ground surface prior to installation of the temporary casings.

Project Status

- The site is currently being monitored on a quarterly basis per the HCDEH directives. The next quarterly sampling event is scheduled for February 2006. Groundwater samples will be analyzed for TPHg, BTEX, and MTBE.
- Table 4 shows the groundwater monitoring schedule.

Recommendations

Blue Rock recommends preparation of a comprehensive closure summary for the site based on these preliminary observations:

- (1) The USTs were removed almost 10 years ago, therefore, the primary source of groundwater contamination has been removed.
- (2) No LNAPL has ever been observed at the site, therefore, this secondary source of groundwater contamination is not present at the site.
- (3) Remedial excavation in 2003 reduced the sorbed-phase TPHg mass from 323 lbs to 21 lbs, thereby significantly mitigating this secondary of groundwater contamination.
- (4) The dissolved-phase plume is stable. Groundwater has been monitored at the site for six years. Flow is consistently toward the west-southwest at relatively low gradients.
- (5) The dissolved-phase concentrations appear to be attenuating with time. The most recent maximum dissolved-phase concentrations are: 1,100 µg/L TPHg, 6.3 µg/L benzene, and 9.4 µg/L MTBE (November 2005). These concentrations are approximately within an approximate order of magnitude of NCRWQCB clean-up goals.
- (6) The subsurface is conducive to ongoing bioattenuation of residual contaminants. DO levels are consistently above 1 mg/L, which is generally accepted as the minimum DO level needed to support ongoing aerobic biodegradation of the fuel hydrocarbons (McAllister and Chiang, 1994).

Blue Rock recommends using the Closure Evaluation process recommended in the *Appendix A – Reports Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Storage Tank Sites* by the Central Valley Regional Water Quality Control Board dated April 16, 2004 (attached). Specifically, Sections 6.5 and 6.6 are applicable: “NFAR for Cases Exceeding Water Quality Objectives” and “NFAR Documentation”.

References

- McAllister, P.M. and Chiang, C.Y. 1994. *A Practical Approach to Evaluating Natural Attenuation of Contaminants in Ground Water*. Groundwater Monitoring and Remediation, Spring 1994, p. 161-173.

Certification

This report was prepared under the supervision of a California Professional Geologist at Blue Rock. All statements, conclusions, and recommendations are based upon published results from past consultants, field observations by Blue Rock, and analyses performed by a state-certified laboratory as they relate to the time, location, and depth of points sampled by Blue Rock. Interpretation of data, including spatial distribution and temporal trends, are based on commonly used geologic and scientific principles. It is possible that interpretations, conclusions, and recommendations presented in this report may change, as additional data become available and/or regulations change.

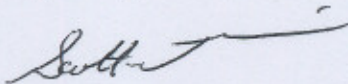
Information and interpretation presented herein are for the sole use of the client and regulating agency. The information and interpretation contained in this document should not be relied upon by a third party.

The service performed by Blue Rock has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the area of the site. No other warranty, expressed or implied, is made.

If you have any questions regarding this project, please contact us at (707) 441-1934.

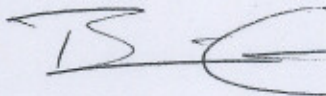
Sincerely,
Blue Rock Environmental, Inc.

Prepared by:

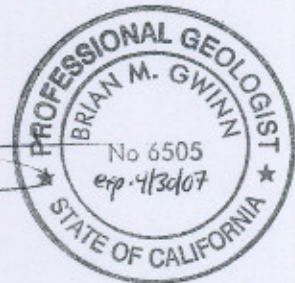


Scott Ferriman
Project Scientist

Reviewed by:



Brian Gwinn, PG
Principal Geologist



Attachments:

Table 1: Groundwater Elevations and Analytical Results
Table 2: Intrinsic Bioremediation Data
Table 3: Well Construction Details
Table 4: Groundwater Monitoring Schedule

Figure 1: Site Location Map
Figure 2: Site Plan
Figure 3: Groundwater Elevation and Gradient – 11/1/05
Figure 4a: Dissolved-Phase TPHg Distribution Map – 11/1/05
Figure 4b: Dissolved-Phase Benzene Distribution Map – 11/1/05
Figure 4c: Dissolved-Phase MTBE Distribution Map – 11/1/05

Blue Rock's Gauge/Purge Calculations and Well Purging Data Field Sheets
Laboratory Analytical Reports and Chain-of-Custody Forms

Appendix A – Reports Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Storage Tank Sites by the CVRWQCB dated April 16, 2004

Distribution:

Ken Elliott
PO Box 54
Hydesville, CA 95547

Betty Kinoshita
US Bank
P.O. Box 3108
Portland, OR 97208-3108

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS
 Elliott's Service Center
 761 Eel River Drive
 Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHg (µg/L) | TPHd (µg/L) | TPHmo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | MTBE (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | TBA (µg/L) | Methanol (µg/L) | Ethanol (µg/L) |
|------------------|---------------|------------|------------|------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| Tank#3 | 12/18/89 | -- | -- | -- | 24,000 | -- | -- | <48 | 140 | 130 | 910 | -- | -- | -- | -- | -- | -- | -- |
| Tank#4 | 12/18/89 | -- | -- | -- | 26,000 | -- | -- | 680 | 850 | 670 | 2,500 | -- | -- | -- | -- | -- | -- | -- |
| B-6 | 11/21/96 | -- | -- | -- | 53 | -- | -- | <0.5 | <0.5 | <0.5 | <1 | <5 | -- | -- | -- | -- | -- | -- |
| B-7 | 11/21/96 | -- | -- | -- | 4,200 | 93 | -- | 39 | <5 | 220 | 290 | <50 | -- | -- | -- | -- | -- | -- |
| B-9 | 6/28/05 | 26.47 | 12.83 | 13.64 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 2.1 | -- | -- | -- | -- | -- | -- |
| B-10 | 6/28/05 | 30.47 | 19.48 | 10.99 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 18 | -- | -- | -- | -- | -- | -- |
| B-11 | 6/28/05 | 27.69 | 12.41 | 15.28 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 3 | -- | -- | -- | -- | -- | -- |
| MW-1 | 5/15/00 | 98.88 | 10.21 | 88.67 | <50 | <50 | -- | <0.3 | <0.3 | 0.5 | <0.6 | 6.4 | <0.5 | <0.5 | 0.5 | <500 | -- | -- |
| Screen 5'-20' | 8/23/00 | 98.88 | 12.31 | 86.57 | <50 | <50 | <50 | 0.54 | <0.5 | <0.5 | <0.5 | 11 | -- | -- | 0.98 | -- | <50 | <5 |
| | 10/30/00 | 98.88 | 12.78 | 86.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/16/00 | 98.88 | 12.58 | 86.30 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 4.8 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 12/7/01 | 98.88 | 12.23 | 86.65 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1/22/01 | 98.88 | 12.17 | 86.71 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/6/01 | 98.88 | 11.69 | 87.19 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 23 | <0.5 | <0.5 | 2.7 | <5 | <50 | <5 |
| | 3/8/01 | 98.88 | 10.75 | 88.13 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/11/01 | 98.88 | 12.01 | 86.87 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/12/01 | 98.88 | 12.81 | 86.07 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/20/01 | 98.88 | 14.12 | 84.76 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/15/01 | 98.88 | 14.91 | 83.97 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.6 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5.0 |
| | 11/2/01 | 98.88 | 16.18 | 82.70 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.51 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.88 | 11.89 | 86.99 | 80 | -- | -- | 2.5 | <0.5 | <0.5 | <0.5 | 33 | <0.5 | <0.5 | 6.3 | <5 | -- | -- |
| | 5/8/02 | 98.88 | 11.98 | 86.90 | 130 | 320 | -- | 4.7 | <0.5 | <0.5 | <0.5 | 58 | <0.5 | <0.5 | 11 | <5 | -- | -- |
| | 8/14/02 | 29.57 | 15.33 | 14.24 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 29.57 | 16.58 | 12.99 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 29.57 | 11.65 | 17.92 | 210 | <200 | -- | 10 | <0.5 | <0.5 | <0.5 | 71 | <0.5 | <0.5 | 12 | <5 | -- | -- |
| | 5/9/03 | 29.57 | 10.18 | 19.39 | 150 | 340 | -- | 4.2 | <0.5 | <0.5 | <0.5 | 39 | <0.5 | <0.5 | 6.4 | <5 | -- | -- |
| | 8/18/03 | 29.57 | 12.71 | 16.86 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 2.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 29.57 | 14.74 | 14.83 | <50 | 93 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 3.4 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 29.57 | 10.50 | 19.07 | <50 | 230 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 43 | <0.5 | <0.5 | 1.8 | <5 | -- | -- |
| | 5/4/04 | 29.57 | 11.55 | 18.02 | 68 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | 85 | <0.5 | <0.5 | 2.9 | <5 | -- | -- |
| | 7/27/04 | 29.57 | 14.44 | 15.13 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 7.4 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 29.57 | 13.14 | 16.43 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 43 | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 29.57 | 10.99 | 18.58 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 76 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 29.57 | 11.36 | 18.21 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 37 | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 29.57 | 12.20 | 17.37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 29.57 | 13.15 | 16.42 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 7.8 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 29.57 | 13.27 | 16.30 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 4.9 | -- | -- | -- | -- | -- | -- |

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|----------|---------------|------------|------------|------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| MW-2 | 5/15/00 | 98.10 | 10.35 | 87.75 | 708 | 186 | -- | <0.3 | 7.7 | 19.2 | 152 | 27.2 | <0.5 | <0.5 | <0.5 | <500 | -- | -- |
| | 8/23/00 | 98.10 | 12.32 | 85.78 | 2,200 | 241 | <50 | 8.9 | 11 | 72 | 410 | 79 | -- | -- | 1.3 | -- | <50 | <5 |
| Screen | 10/30/00 | 98.10 | 12.59 | 85.51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/16/00 | 98.10 | 12.35 | 85.75 | 1,600 | 226 | -- | 4.9 | 1.1 | 46 | 240 | 38 | <0.5 | <0.5 | 0.57 | 11 | <50 | <5 |
| 5'-20' | 12/7/01 | 98.10 | 11.99 | 86.11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1/22/01 | 98.10 | 11.96 | 86.14 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/6/01 | 98.10 | 11.49 | 86.61 | 1,600 | <200 | -- | 2.3 | 3.0 | 31 | 230 | 35 | <0.5 | <0.5 | 0.77 | 6.8 | <50 | <5 |
| | 3/8/01 | 98.10 | 10.38 | 87.72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/11/01 | 98.10 | 11.79 | 86.31 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/12/01 | 98.10 | 12.59 | 85.51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/20/01 | 98.10 | 13.95 | 84.15 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/15/01 | 98.10 | 14.73 | 83.37 | 310 | <100 | -- | 1.7 | <0.5 | 3.6 | 8.4 | 39 | <0.5 | <0.5 | 1.1 | 7.4 | <50 | <5.0 |
| | 11/2/01 | 98.10 | 16.02 | 82.08 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 7.1 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.10 | 11.73 | 86.37 | 4,200 | -- | -- | 4.6 | 5.5 | 110 | 450 | 68 | <0.5 | <0.5 | 2.8 | 17 | -- | -- |
| | 5/8/02 | 98.10 | 11.79 | 86.31 | 8,800 | <500 | -- | 19 | 18 | 290 | 1,200 | 150 | <0.5 | <0.5 | 4.9 | 30 | -- | -- |
| | 8/14/02 | 28.81 | 15.17 | 13.64 | 270 | <100 | -- | 1 | 0.53 | 11 | 14 | 53 | <0.5 | <0.5 | 2 | 9.5 | -- | -- |
| | 11/13/02 | 28.81 | 16.44 | 12.37 | 610 | <100 | -- | <0.5 | 0.55 | 8.1 | 32 | 7.4 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 28.81 | 11.46 | 17.35 | 6,400 | <2,200 | -- | 4.2 | 6.9 | 160 | 490 | 89 | <0.5 | <0.5 | 3.8 | 15 | -- | -- |
| | 5/9/03 | 28.81 | 9.97 | 18.84 | 18,000 | <3,000 | -- | 6.1 | 21 | 480 | 1,800 | 100 | <2.5 | <2.5 | 4.2 | <25 | -- | -- |
| | 8/18/03 | 28.81 | 12.48 | 16.33 | 570 | <200 | -- | 0.9 | <0.5 | 19 | 48 | 28 | <0.5 | <0.5 | 1.3 | <5 | -- | -- |
| | 11/7/03 | 28.81 | 14.49 | 14.32 | 3,500 | <600 | -- | 4.6 | 1.6 | 130 | 200 | 130 | <0.5 | <0.5 | 6.5 | 18 | -- | -- |
| | 2/11/04 | 28.81 | 10.31 | 18.50 | 21,000 | <3,000 | -- | 41 | 41 | 520 | 2,100 | 110 | <5 | <5 | <5 | <50 | -- | -- |
| | 5/4/04 | 28.81 | 11.36 | 17.45 | 13,000 | 840* | -- | 9.7 | 19 | 470 | 1,750 | 72 | <5 | <5 | <5 | <50 | -- | -- |
| | 7/27/04 | 28.81 | 14.22 | 14.59 | 880 | <300 | -- | 2.7 | 0.55 | 28 | 15 | 82 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.81 | 12.89 | 15.92 | 350 | <100 | -- | <0.5 | <0.5 | 12 | 15 | 29 | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.81 | 10.74 | 18.07 | 4,900 | <200 | -- | 4.5 | 5.8 | 160 | 390 | 35 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.81 | 11.13 | 17.68 | 3,300 | <80 | -- | 13 | 3.3 | 94 | 250 | 44 | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.81 | 11.97 | 16.84 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.81 | 12.91 | 15.90 | 770 | <80 | -- | 0.56 | <0.5 | 26 | 44 | 9.6 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.81 | 13.00 | 15.81 | 500 | -- | -- | 0.54 | <0.5 | 10 | 20 | 9.4 | -- | -- | -- | -- | -- | -- |

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS

Elliott's Service Center
761 Eel River Drive
Loleta, California
Blue Rock Project No. NC-002

| Well No. | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHg (µg/L) | TPHd (µg/L) | TPHmo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | MTBE (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | TBA (µg/L) | Methanol (µg/L) | Ethanol (µg/L) |
|---------------|---------------|------------|------------|------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| MW-3 | 5/15/00 | 98.05 | 10.46 | 87.59 | <50 | <50 | -- | <0.3 | <0.3 | <0.3 | <0.6 | <2 | <0.5 | <0.5 | <0.5 | <500 | -- | -- |
| | 8/23/00 | 98.05 | 12.46 | 85.59 | <50 | <50 | <50 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | <0.5 | -- | <50 | <5 |
| Screen 5'-20' | 10/30/00 | 98.05 | 12.71 | 85.34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/16/00 | 98.05 | 12.47 | 85.58 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.7 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 12/7/01 | 98.05 | 12.11 | 85.94 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1/22/01 | 98.05 | 12.06 | 85.99 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/6/01 | 98.05 | 11.58 | 86.47 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.51 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 3/8/01 | 98.05 | 10.41 | 87.64 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/11/01 | 98.05 | 11.88 | 86.17 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/12/01 | 98.05 | 12.71 | 85.34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/20/01 | 98.05 | 14.08 | 83.97 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/15/01 | 98.05 | 14.88 | 83.17 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.56 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 11/2/01 | 98.05 | 16.17 | 81.88 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.05 | 11.84 | 86.21 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/8/02 | 98.05 | 11.90 | 86.15 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/14/02 | 28.75 | 15.33 | 13.42 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 28.75 | 16.70 | 12.05 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 28.75 | 11.55 | 17.20 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/9/03 | 28.75 | 10.00 | 18.75 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/18/03 | 28.75 | 12.58 | 16.17 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 28.75 | 14.62 | 14.13 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 28.75 | 10.39 | 18.36 | <50 | 180 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/4/04 | 28.75 | 11.45 | 17.30 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 7/27/04 | 28.75 | 14.38 | 14.37 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.75 | 13.07 | 15.68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.75 | 10.83 | 17.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.75 | 11.21 | 17.54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.75 | 12.10 | 16.65 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.75 | 13.04 | 15.71 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.75 | 13.15 | 15.60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS

Elliott's Service Center
761 Eel River Drive
Loleta, California
Blue Rock Project No. NC-002

| Well | Sampling | TOC | DTW | GWE | TPHg | TPHd | TPHmo | Benzene | Toluene | Ethylbenzene | Xylenes | MTBE | DIPE | ETBE | TAME | TBA | Methanol | Ethanol |
|--------|----------|--------|--------|--------|--------|--------|--------|---------|---------|--------------|---------|--------|--------|--------|--------|--------|----------|---------|
| No. | Date | (feet) | (feet) | (feet) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) | (µg/L) |
| MW-4 | 5/15/00 | 98.43 | 10.27 | 88.16 | 3,390 | 1,490 | -- | 13 | 6 | 350 | 326 | <2 | <0.5 | <0.5 | <0.5 | <500 | -- | -- |
| | 8/23/00 | 98.43 | 12.33 | 86.10 | 15,000 | 1,550 | <50 | 43 | 15 | 780 | 770 | 3.0 | -- | -- | <2 | -- | <200 | <20 |
| Screen | 10/30/00 | 98.43 | 12.64 | 85.79 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/16/00 | 98.43 | 12.38 | 86.05 | 10,000 | 1,800 | -- | 20 | 7.4 | 410 | 420 | 5.2 | <2 | <2 | <2 | <20 | <200 | <20 |
| 5'-20' | 12/7/01 | 98.43 | 12.03 | 86.40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 1/22/01 | 98.43 | 12.01 | 86.42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/5/01 | 98.43 | 11.52 | 86.91 | 15,000 | <800 | -- | 32 | 14 | 720 | 830 | 5.9 | <2 | <2 | <2 | <20 | <200 | <20 |
| | 3/8/01 | 98.43 | 10.40 | 88.03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/11/01 | 98.43 | 11.83 | 86.60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/12/01 | 98.43 | 12.63 | 85.80 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/20/01 | 98.43 | 13.96 | 84.47 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/15/01 | 98.43 | 14.76 | 83.67 | 3,400 | <1,000 | -- | 13 | 3.4 | 220 | 180 | 3 | <1.0 | <1.0 | <1.0 | 16 | <100 | <10 |
| | 11/2/01 | 98.43 | 16.04 | 82.39 | 53 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.43 | 11.72 | 86.71 | 14,000 | -- | -- | 22 | 14 | 640 | 980 | 3.3 | <2.5 | <2.5 | <2.5 | <25 | -- | -- |
| | 5/8/02 | 98.43 | 11.80 | 86.63 | 8,100 | <1,000 | -- | 15 | 6.5 | 340 | 530 | 2.9 | <1.0 | <1.0 | <1.0 | 15 | -- | -- |
| | 8/14/02 | 29.14 | 15.19 | 13.95 | 1,700 | <250 | -- | 5.8 | 0.81 | 53 | 11 | <1.5 | <0.5 | <0.5 | <0.5 | 7.4 | -- | -- |
| | 11/13/02 | 29.14 | 16.46 | 12.68 | 510 | <50 | -- | 1.5 | <0.5 | 15 | 4.6 | <0.5 | <0.5 | <0.5 | <0.5 | <5.0 | -- | -- |
| | 2/25/03 | 29.14 | 11.46 | 17.68 | 6,600 | <2,000 | -- | 16 | 4.3 | 170 | 200 | 2.9 | <0.5 | <0.5 | <0.5 | 19 | -- | -- |
| | 5/9/03 | 29.14 | 9.98 | 19.16 | 6,700 | <2,000 | -- | 16 | 5.4 | 350 | 250 | 3.4 | <1 | <1 | <1 | 21 | -- | -- |
| | 8/18/03 | 29.14 | 12.53 | 16.61 | 4,000 | <1,500 | -- | 8 | 2.2 | 110 | 150 | 1.5 | <0.5 | <0.5 | <0.5 | 8.7 | -- | -- |
| | 11/7/03 | 29.14 | 14.55 | 14.59 | 3,000 | <800 | -- | 7.6 | 0.71 | 81 | 36 | 1.4 | <0.5 | <0.5 | <0.5 | 9.2 | -- | -- |
| | 2/11/04 | 29.14 | 10.34 | 18.80 | 23,000 | <5,000 | -- | 29 | 17 | 1,100 | 1,400 | <5 | <5 | <5 | <5 | <50 | -- | -- |
| | 5/4/04 | 29.14 | 11.37 | 17.77 | 31,000 | 5,700* | -- | <50 | <50 | 1,700 | 2,250 | <50 | <50 | <50 | <50 | <500 | -- | -- |
| | 7/27/04 | 29.14 | 14.27 | 14.87 | 870 | <300 | -- | 3.6 | 0.56 | 35 | 9.5 | 0.64 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 29.14 | 12.97 | 16.17 | 1,300 | <400 | -- | 5.2 | 0.58 | 16 | 22 | 0.66 | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 29.14 | 10.78 | 18.36 | 20,000 | <200 | -- | 21 | 9.9 | 920 | 920 | <2.5 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 29.14 | 11.16 | 17.98 | 13,000 | <500 | -- | 16 | 7.8 | 570 | 580 | <2.5 | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 29.14 | 12.02 | 17.12 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 29.14 | 12.97 | 16.17 | 4,400 | <300 | -- | 10 | 2.8 | 160 | 170 | 1.2 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 29.14 | 13.08 | 16.06 | 1,100 | -- | -- | 4.4 | <0.5 | 40 | 10 | 0.68 | -- | -- | -- | -- | -- | -- |

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS

Elliott's Service Center
761 Eel River Drive
Loleta, California
Blue Rock Project No. NC-002

| Well No. | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHg (µg/L) | TPHd (µg/L) | TPHmo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | MTBE (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | TBA (µg/L) | Methanol (µg/L) | Ethanol (µg/L) |
|--------------------------|---------------|------------|------------|------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| MW-5 Screen 5'-25' | 8/15/01 | 97.54 | 14.23 | 83.31 | <50 | 150 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 2 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 11/2/01 | 97.54 | 15.53 | 82.01 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 97.54 | 11.42 | 86.12 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/8/02 | 97.54 | 11.52 | 86.02 | <50 | 72 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/14/02 | 28.28 | 14.72 | 13.56 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.8 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 28.28 | 15.92 | 12.36 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 28.28 | 11.23 | 17.05 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.93 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/9/03 | 28.28 | 9.89 | 18.39 | <50 | 110 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/18/03 | 28.28 | 12.17 | 16.11 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.91 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 28.28 | 14.11 | 14.17 | <50 | 130 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 28.28 | 10.18 | 18.10 | <50 | 140 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/4/04 | 28.28 | 11.13 | 17.15 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | 0.6 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 7/27/04 | 28.28 | 13.81 | 14.47 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.6 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.28 | 12.54 | 15.74 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.28 | 10.57 | 17.71 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.73 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.28 | 10.92 | 17.36 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.28 | 11.68 | 16.60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.28 | 12.54 | 15.74 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.5 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.28 | 12.65 | 15.63 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-6 Screen 5'-25' | 8/15/01 | 97.90 | 15.02 | 82.88 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 3.9 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 11/2/01 | 97.90 | 16.28 | 81.62 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.4 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 97.90 | 11.95 | 85.95 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.1 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/8/02 | 97.90 | 12.04 | 85.86 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/14/02 | 28.58 | 15.46 | 13.12 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 28.58 | 16.73 | 11.85 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 2.7 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 28.58 | 11.67 | 16.91 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.4 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/9/03 | 28.58 | 10.19 | 18.39 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.85 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/18/03 | 28.58 | 12.70 | 15.88 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.72 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 28.58 | 14.76 | 13.82 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.96 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 28.58 | 10.57 | 18.01 | <50 | 160 | -- | 0.84 | <0.5 | <0.5 | 1.4 | 2.3 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/4/04 | 28.58 | 11.62 | 16.96 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 7/27/04 | 28.58 | 14.51 | 14.07 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.3 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.58 | 13.17 | 15.41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.58 | 10.97 | 17.61 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.58 | 11.37 | 17.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.58 | 12.24 | 16.34 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.58 | 13.17 | 15.41 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.58 | 13.25 | 15.33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS
 Elliott's Service Center
 761 Eel River Drive
 Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHg (µg/L) | TPHd (µg/L) | TPHmo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | MTBE (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | TBA (µg/L) | Methanol (µg/L) | Ethanol (µg/L) |
|------------------------------|---------------|------------|------------|------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| MW-7 Screen 5'-25' | 8/15/01 | 98.61 | 19.11 | 79.50 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.7 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 11/2/01 | 98.61 | 20.63 | 77.98 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.8 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.61 | 15.53 | 83.08 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.1 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/8/02 | 98.61 | 15.63 | 82.98 | <50 | 76 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 2.0 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/14/02 | 29.29 | 19.93 | 9.36 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.3 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 29.29 | 21.62 | 7.67 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.93 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 29.29 | 15.21 | 14.08 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.0 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/9/03 | 29.29 | 13.24 | 16.05 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.81 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/18/03 | 29.29 | 16.41 | 12.88 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 1.2 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 29.29 | 18.63 | 10.66 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 29.29 | 14.01 | 15.28 | <50 | 140 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/4/04 | 29.29 | 15.38 | 13.91 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 7/27/04 | 29.29 | 18.76 | 10.53 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 29.29 | 17.09 | 12.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 29.29 | 14.25 | 15.04 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 29.29 | 14.80 | 14.49 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 29.29 | 16.02 | 13.27 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 29.29 | 17.17 | 12.12 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 29.29 | 17.03 | 12.26 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-8 Screen 5'-25' | 8/15/01 | 98.20 | 14.99 | 83.21 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | <50 | <5 |
| | 11/2/01 | 98.20 | 16.26 | 81.94 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.61 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/1/02 | 98.20 | 11.94 | 86.26 | <50 | -- | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.65 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/8/02 | 98.20 | 11.95 | 86.25 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/14/02 | 28.89 | 15.41 | 13.48 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.63 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/13/02 | 28.89 | 16.71 | 12.18 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.57 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/25/03 | 28.89 | 11.63 | 17.26 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/9/03 | 28.89 | 10.06 | 18.83 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | 0.6 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 8/18/03 | 28.89 | 12.68 | 16.21 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 11/7/03 | 28.89 | 14.74 | 14.15 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 2/11/04 | 28.89 | 10.45 | 18.44 | <50 | 170 | -- | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 5/4/04 | 28.89 | 11.52 | 17.37 | <50 | <50 | -- | <0.5 | <0.5 | <0.5 | <1 | <0.5 | <0.5 | <0.5 | <0.5 | <5 | -- | -- |
| | 7/27/04 | 28.89 | 14.47 | 14.42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.89 | 13.17 | 15.72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.89 | 10.91 | 17.98 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.89 | 11.30 | 17.59 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.89 | 12.18 | 16.71 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.89 | 13.13 | 15.76 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.89 | 13.24 | 15.65 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Table 1
GROUNDWATER ELEVATIONS AND
ANALYTICAL RESULTS

Elliott's Service Center
761 Eel River Drive
Loleta, California
Blue Rock Project No. NC-002

| Well No. | Sampling Date | TOC (feet) | DTW (feet) | GWE (feet) | TPHg (µg/L) | TPHd (µg/L) | TPHmo (µg/L) | Benzene (µg/L) | Toluene (µg/L) | Ethylbenzene (µg/L) | Xylenes (µg/L) | MTBE (µg/L) | DIPE (µg/L) | ETBE (µg/L) | TAME (µg/L) | TBA (µg/L) | Methanol (µg/L) | Ethanol (µg/L) |
|---------------------------|---------------|------------|------------|------------------------|-------------|-------------|--------------|----------------|----------------|---------------------|----------------|-------------|-------------|-------------|-------------|------------|-----------------|----------------|
| MW-9 Screen 5'-25' | 7/27/04 | 28.28 | 13.94 | 14.34 | 150 | <100 | -- | 0.88 | <0.5 | 1.4 | 16 | 0.68 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.28 | 12.64 | 15.64 | 140 | <50 | -- | 1.0 | <0.5 | 3.2 | 9.4 | 0.81 | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.28 | 10.53 | 17.75 | 440 | <50 | -- | 4.8 | 1.1 | 8.7 | 51 | 7.9 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.28 | 10.90 | 17.38 | 1,800 | <50 | -- | 18 | 6.5 | 46 | 200 | 12 | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.28 | 11.73 | 16.55 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.28 | 12.64 | 15.64 | 550 | <80 | -- | 6.3 | 1.2 | 13 | 42 | 1.3 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.28 | 12.73 | 15.55 | 440 | -- | -- | 4.8 | 0.62 | 22 | 17 | 3.7 | -- | -- | -- | -- | -- | -- |
| MW-10 Screen 5'-25' | 7/27/04 | 28.78 | 13.70 | 15.08 | 84 | <50 | -- | 1.9 | <0.5 | 0.52 | 5.7 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 28.78 | 12.42 | 16.36 | 1,200 | <200 | -- | 43 | 1.2 | 12 | 120 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 28.78 | 10.28 | 18.50 | 180 | <50 | -- | 11 | <0.5 | 1.1 | 19 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 28.78 | 10.65 | 18.13 | 140 | <50 | -- | 6.4 | <0.5 | 2.0 | 14 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 6/28/05 | 28.78 | 11.50 | 17.28 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 28.78 | 12.45 | 16.33 | 180 | <50 | -- | 9.5 | <0.5 | 2.7 | 17 | <0.5 | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 28.78 | 12.56 | 16.22 | 160 | -- | -- | 6.3 | <0.5 | 1.2 | 15 | <0.5 | -- | -- | -- | -- | -- | -- |
| PZ-1 | 5/15/00 | -- | -- | -- | <50 | 206 | -- | <0.3 | <0.3 | 0.6 | 0.8 | <2 | <0.5 | <0.5 | <0.5 | <500 | -- | -- |
| | | | | MCL | -- | -- | -- | 1 | 150 | 300 | 1,750 | 13 | | | | | | |
| | | | | Taste & odor threshold | 5 | 100 | -- | -- | 42 | 29 | 17 | -- | | | | | | |
| | | | | Cleanup Goals | 50 | 100 | 175 | 0.5 | 42 | 29 | 17 | 5 | | | | | | |

Notes:

TOC: Top of casing referenced to feet above mean sea level (msl) in August 2002.
DTW: Depth to water as referenced to top of well casing.
GWE: Groundwater elevation as referenced to benchmark.
TPHg: Total Petroleum Hydrocarbons as Gasoline by EPA 5030/8260B.
TPHd: Total Petroleum Hydrocarbons as Diesel by EPA Method 3510/8015M.
TPHmo: Total Petroleum Hydrocarbons as motor oil by EPA Method 3510/8015M.
BTEX: Benzene, toluene, ethylbenzene, and xylenes by EPA method 8260B.
MTBE: Methyl tertiary butyl ether by EPA method 8260B.
DIPE: Diisopropyl ether by EPA Method 8260B.

ETBE: Ethyl-t-butyl ether by EPA Method 8260B.

TAME: Tertiary amyl methyl ether by EPA Method 8260B.

TBA: Tert-Butanol by EPA Method 8260B.

Methanol & Ethanol: by EPA Method 8260B.

µg/L: micrograms per liter = ppb = parts per billion

"--": Not analyzed, available, or applicable

MCL: Maximum contaminant level, a Federal drinking water standard based on health, technology and economics.

Taste & odor threshold: A drinking water standard

* The sample chromatogram does not match the standard chromatogram for this compound.

TABLE 2
INTRINSIC BIOREMEDIATION DATA
 Elliott's Service Center
 761 Eel River Drive, Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Date | TPH _g (µg/L) | MTBE (µg/L) | D.O.* (mg/L) | Eh* (mV) | Temp (C) | pH* | Total | | Ammonia (mg/L) | Sulfate (mg/L) | Ortho Phosphate (mg/L) | Ferrous Iron (mg/L) | TOC (mg/L) | COD (mg/L) | BOD (mg/L) | Heterotrophic Plate Count (CFU/mL) | Aerobic Hydrocarbon Degraders (CFU/mL) | Anaerobic Hydrocarbon Degraders (CFU/mL) |
|----------|----------|----------------------------|----------------|-----------------|-------------|-------------|-----|----------------------|-------------------|-------------------|-------------------|------------------------------|---------------------------|---------------|---------------|---------------|--|---|---|
| | | | | | | | | Alkalinity (mg/L) | Nitrate (mg/L) | | | | | | | | | | |
| MW-1 | 5/8/02 | 130 | 58 | 0.86 | 115 | 17.2 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/14/02 | <50 | 1.7 | 4.04 | 249 | 15.2 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/13/02 | <50 | 0.7 | 2.21 | 204 | 15.2 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/25/03 | 210 | 71 | 1.28 | 232 | 13.3 | 6.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | 150 | 39 | 1.16 | 29 | 14.6 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | <50 | 2.5 | 1.04 | 161 | 16.0 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | <50 | 3.4 | 1.19 | 292 | 16.1 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | <50 | 43 | -- | -- | 15.3 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | 68 | 85 | 2.94 | -- | 15.2 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | <50 | 7.4 | 1.86 | -- | 16.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | <50 | 43 | 1.71 | -- | 15.7 | 5.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | <50 | 76 | 1.68 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | <50 | 37 | 4.52 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | <50 | 7.8 | 4.43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | <50 | 4.9 | 5.08 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-2 | 5/8/02 | 8,800 | 150 | 1.00 | 99 | 18.0 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/14/02 | 270 | 53 | 3.60 | 222 | 15.9 | 6.4 | 39 | 17 | 0.50 | 2.9 | -- | <0.1 | 2.4 | <10 | <3 | 2,000 | 200 | 200 |
| | 11/13/02 | 610 | 7.4 | 3.16 | 197 | 16.5 | 5.6 | 34 | 18 | 0.17 | 3.3 | -- | <0.1 | <2 | 14 | <3 | 200,000 | 100 | 20,000 |
| | 2/25/03 | 6,400 | 89 | 1.65 | 148 | 13.4 | 6.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | 18,000 | 100 | 1.44 | 21 | 14.9 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | 570 | 28 | 1.22 | 127 | 16.6 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | 3,500 | 130 | 1.27 | 181 | 16.3 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | 21,000 | 110 | -- | -- | 15.3 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | 13,000 | 72 | 2.70 | -- | 16.1 | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | 880 | 82 | 1.83 | -- | 16.0 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 350 | 29 | 1.63 | -- | 15.8 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 4,900 | 35 | 1.54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 3,300 | 44 | 0.61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 770 | 9.6 | 3.90 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 500 | 9.4 | 6.41 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-3 | 5/8/02 | <50 | <0.5 | 1.20 | 112 | 18.1 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/14/02 | <50 | <0.5 | 3.84 | 233 | 15.8 | 6.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/13/02 | <50 | <0.5 | 3.67 | 229 | 15.2 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/25/03 | <50 | <0.5 | 1.17 | 230 | 13.3 | 6.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | <50 | <0.5 | 1.08 | 39 | 15.0 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | <50 | <0.5 | 1.02 | 268 | 16.3 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | <50 | <0.5 | 1.47 | 318 | 16.9 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | <50 | <0.5 | -- | -- | 15.2 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | <50 | <0.5 | 2.94 | -- | 15.2 | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | -- | -- | 1.82 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | -- | -- | 1.77 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | -- | -- | 1.40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | -- | -- | 3.95 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | -- | -- | 4.43 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

TABLE 2
INTRINSIC BIOREMEDIATION DATA
 Elliott's Service Center
 761 Eel River Drive, Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Date | TPHg (µg/L) | MTBE (µg/L) | D.O.* (mg/L) | Eh* (mV) | Temp (C) | pH* | Total | | | | Ortho Phosphate (mg/L) | Ferrous Iron (mg/L) | TOC (mg/L) | COD (mg/L) | BOD (mg/L) | Heterotrophic Plate Count (CFU/mL) | Aerobic Hydrocarbon Degraders (CFU/mL) | Anaerobic Hydrocarbon Degraders (CFU/mL) |
|----------|----------|-------------|-------------|--------------|----------|----------|-----|-------------------|----------------|----------------|----------------|------------------------|---------------------|------------|------------|------------|------------------------------------|--|--|
| | | | | | | | | Alkalinity (mg/L) | Nitrate (mg/L) | Ammonia (mg/L) | Sulfate (mg/L) | | | | | | | | |
| MW-4 | 5/8/02 | 8,100 | 2.9 | 1.10 | 85 | 17.6 | 6.7 | 98 | 3.8 | 0.38 | 2.3 | <0.5 | 2.5 | 19 | -- | 28 | 600,000 | 2,000 | 10,000 |
| | 8/14/02 | 1,700 | <1.5 | 4.54 | 138 | 16.0 | 6.6 | 58 | 10 | 0.29 | 3.3 | -- | 0.24 | 3.6 | 19 | <3 | 6,000 | 700 | 20,000 |
| | 11/13/02 | 510 | <0.5 | 2.41 | 190 | 16.0 | 5.1 | 25 | 18 | 0.13 | 3.5 | -- | <0.1 | 4.8 | 12 | <3 | 4,000 | <10 | 7,000 |
| | 2/25/03 | 6,600 | 2.9 | 1.70 | 149 | 13.5 | 6.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | 6,700 | 3.4 | 1.24 | 42 | 15.0 | 6.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | 4,000 | 1.5 | 1.29 | 111 | 16.8 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | 3,000 | 1.4 | 1.21 | 160 | 16.9 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | 23,000 | <5 | -- | -- | 15.3 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | 31,000 | <50 | 2.49 | -- | 16.8 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | 870 | 0.64 | 1.71 | -- | 16.0 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 1,300 | 0.66 | 1.49 | -- | 15.7 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 20,000 | <2.5 | 1.32 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 13,000 | <2.5 | 0.78 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 4,400 | 1.2 | 1.63 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 1,100 | 0.68 | 3.25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-5 | 5/8/02 | <50 | 1.2 | 0.98 | 97 | 18.2 | 6.7 | 22 | 19 | 0.14 | 3.5 | <0.5 | <0.1 | 3.4 | -- | <3 | 2,000 | 130 | 1,000 |
| | 8/14/02 | <50 | 1.8 | 4.20 | 237 | 15.3 | 6.7 | 26 | 17 | <0.10 | 3.4 | -- | <0.1 | <2 | <10 | <3 | 200 | 60 | 70 |
| | 11/13/02 | <50 | 1.7 | 2.37 | 190 | 16.1 | 5.7 | 23 | 16 | 0.12 | 3.6 | -- | <0.1 | 2.2 | 47 | <3 | 400,000 | 20 | 2,000 |
| | 2/25/03 | <50 | 0.93 | 1.47 | 225 | 13.3 | 6.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | <50 | 1.5 | 1.21 | 40 | 14.9 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | <50 | 0.91 | 1.22 | 287 | 15.8 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | <50 | 1.3 | 1.29 | 292 | 17.1 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | <50 | 1.2 | -- | -- | 15.4 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | <50 | 0.6 | 2.94 | -- | 16.9 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | <50 | 1.6 | 1.44 | -- | 16.0 | 5.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | -- | -- | 1.42 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | <50 | 0.73 | 1.27 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | <50 | 1.5 | 5.94 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | -- | -- | 5.31 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| MW-6 | 5/8/02 | <50 | 1.2 | 1.20 | 93 | 18.0 | 6.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/14/02 | <50 | 1.7 | 4.49 | 233 | 15.7 | 6.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/13/02 | <50 | 2.7 | 2.26 | 186 | 15.4 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/25/03 | <50 | 1.4 | 1.61 | 225 | 13.4 | 6.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/9/03 | <50 | 0.85 | 1.27 | 38 | 15.0 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/18/03 | <50 | 0.72 | 1.14 | 336 | 16.6 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/7/03 | <50 | 0.96 | 1.16 | 265 | 16.8 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/11/04 | <50 | 2.3 | -- | -- | 15.1 | 6.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/4/04 | <50 | <0.5 | 2.96 | -- | 15.2 | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 7/27/04 | <50 | 1.3 | 1.53 | -- | 16.0 | 5.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | -- | -- | 1.39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | <50 | <0.5 | 1.49 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | <50 | <0.5 | 6.62 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | -- | -- | 5.54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

TABLE 2
INTRINSIC BIOREMEDIATION DATA
 Elliott's Service Center
 761 Eel River Drive, Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Date | TPHg (µg/L) | MTBE (µg/L) | D.O.* (mg/L) | Eh* (mV) | Temp (C) | pH* | Total | | | | Ortho Phosphate (mg/L) | Ferrous | | TOC (mg/L) | COD (mg/L) | BOD (mg/L) | Heterotrophic | | Aerobic | Anaerobic |
|----------|----------|-------------|-------------|--------------|----------|----------|-----|-------------------|----------------|----------------|----------------|------------------------|-------------|-----|------------|------------|------------|----------------------|--------------------|--------------------|-----------|
| | | | | | | | | Alkalinity (mg/L) | Nitrate (mg/L) | Ammonia (mg/L) | Sulfate (mg/L) | | Iron (mg/L) | | | | | Plate Count (CFU/mL) | Degraders (CFU/mL) | Degraders (CFU/mL) | |
| MW-7 | 5/8/02 | <50 | 2 | 0.97 | 208 | 18.2 | 6.6 | 34 | 18 | 0.16 | 3.8 | <0.5 | <0.1 | 2.8 | -- | <3 | 30,000 | 1,000 | 30,000 | | |
| | 8/14/02 | <50 | 1.3 | 4.47 | 244 | 15.8 | 6.7 | 33 | 19 | <0.10 | 3.2 | -- | <0.1 | <2 | <10 | <3 | 10,000 | 1,000 | 7,000 | | |
| | 11/13/02 | <50 | 0.93 | 2.83 | 219 | 15.8 | 5.6 | 24 | 19 | 0.21 | 3.1 | -- | <0.1 | 4.0 | 14 | <3 | 2,000 | 20 | 1,000 | | |
| | 2/25/03 | <50 | 1.0 | 1.55 | 232 | 13.4 | 6.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 5/9/03 | <50 | 0.81 | 1.19 | 39 | 14.7 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 8/18/03 | <50 | 1.2 | 1.19 | 330 | 15.8 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/7/03 | <50 | <0.5 | 1.20 | 217 | 16.1 | 6.5 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/11/04 | <50 | <0.5 | -- | -- | 15.2 | 6.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 5/4/04 | <50 | <0.5 | 2.98 | -- | 15.2 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 7/27/04 | <50 | <0.5 | 1.64 | -- | 16.0 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/5/04 | -- | -- | 1.54 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/2/05 | <50 | <0.5 | 1.70 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 8/1/05 | <50 | <0.5 | 3.07 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/1/05 | -- | -- | 4.65 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| MW-8 | 5/8/02 | <50 | <0.5 | 0.99 | 126 | 17.5 | 6.6 | 32 | 20 | 0.11 | 4.3 | <0.5 | <0.1 | 4.9 | -- | <3 | 2,000 | 100 | 10,000 | | |
| | 8/14/02 | <50 | 0.63 | 4.17 | 213 | 15.7 | 6.8 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/13/02 | <50 | 0.57 | 3.77 | 258 | 14.3 | 5.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/25/03 | <50 | <0.5 | 1.29 | 229 | 13.3 | 6.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 5/9/03 | <50 | 0.6 | 1.09 | 37 | 14.9 | 6.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 8/18/03 | <50 | <0.5 | 1.09 | 334 | 16.8 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/7/03 | <50 | <0.5 | 1.19 | 267 | 16.4 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/11/04 | <50 | <0.5 | -- | -- | 15.7 | 6.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 5/4/04 | <50 | <0.5 | 2.70 | -- | 15.5 | 6.4 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 7/27/04 | -- | -- | 1.72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/5/04 | -- | -- | 1.67 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/2/05 | -- | -- | 1.53 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 8/1/05 | -- | -- | 5.66 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/1/05 | -- | -- | 6.17 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| MW-9 | 7/27/04 | 150 | 0.68 | 1.87 | -- | 16.0 | 5.6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/5/04 | 140 | 0.81 | 1.71 | -- | 15.7 | 6.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 2/2/05 | 440 | 7.9 | 1.60 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 5/6/05 | 1,800 | 12 | 2.25 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 8/1/05 | 550 | 1.3 | 3.61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| | 11/1/05 | 440 | 3.7 | 5.11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |

TABLE 2
INTRINSIC BIOREMEDIATION DATA
 Elliott's Service Center
 761 Eel River Drive, Loleta, California
 Blue Rock Project No. NC-002

| Well No. | Date | TPHg (µg/L) | MTBE (µg/L) | D.O.* (mg/L) | Eh* (mV) | Temp (C) | pH* | Total | | Nitrate (mg/L) | Ammonia (mg/L) | Sulfate (mg/L) | Ortho | Ferrous | TOC (mg/L) | COD (mg/L) | BOD (mg/L) | Heterotrophic | Aerobic | Anaerobic |
|----------|---------|-------------|-------------|--------------|----------|----------|-----|-------------------|------------------|----------------|----------------|----------------|-------------|----------------------|------------|------------|------------|--------------------|--------------------|-----------|
| | | | | | | | | Alkalinity (mg/L) | Phosphate (mg/L) | | | | Iron (mg/L) | Plate Count (CFU/mL) | | | | Degraders (CFU/mL) | Degraders (CFU/mL) | |
| MW-10 | 7/27/04 | 84 | <0.5 | 1.91 | -- | 16.0 | 5.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/5/04 | 1,200 | <0.5 | 1.83 | -- | 15.6 | 5.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 2/2/05 | 180 | <0.5 | 1.61 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 5/6/05 | 140 | <0.5 | 5.85 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 8/1/05 | 180 | <0.5 | 6.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| | 11/1/05 | 160 | <0.5 | 4.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

Notes

TPHg Total petroleum hydrocarbons as gasoline by EPAM 5030/8260B
 MTBE Methyl tertiary butyl ether by EPA Method 8260B
 µg/L micrograms per liter
 mg/L milligrams per liter
 * Parameters measured in field and recorded on field sheets
 mV Millivolts
 CFU/mL Colony forming units per milliliter
 D.O. Dissolved oxygen measured with downhole meter
 Eh Reduction-oxidation potential measured with downhole meter
 pH pH measured with field meter
 Alkalinity by EPA Method 310.1
 Nitrate by EPA Method 353.3

Ammonia by EPA Method 350.2
 Sulfate by EPA Method 375.4
 Phosphate by EPA Method 365.2
 TOC Total Organic Carbon by EPA Method 415.2
 Ferrous Iron by Standard Method 3500
 BOD Biological Oxygen Demand by EPA Method 405.1
 Heterotrophic
 Plate Count Bacteria enumeration assay by Standard Method 9215B modified
 Hydrocarbon
 Degraders Bacteria enumeration assay for diesel and gasoline degraders
 *--: Not analyzed, available, or applicable
 <### Not detected above the number indicated

Table 3
WELL CONSTRUCTION DETAILS

Elliott's Service Center
761 Eel River Drive
Loleta, California
Blue Rock Project No. NC-002

| Well Identification | Date Installed | Installed by | Casing Diameter (inches) | Total Depth (feet) | Blank Interval (feet) | Screened Interval (feet) | Slot Size (inches) | Filter Pack (feet) | Bentonite Seal (feet) | Cement (feet) |
|------------------------|-------------------|-----------------|--------------------------------|--------------------------|-----------------------------|--------------------------------|--------------------------|--------------------------|-----------------------------|------------------|
| MW-1 | 5/10/00 | Clearwater | 2 | 20 | 0-5 | 5-20 | 0.02 | 4.5-20 | 2.5-4.5 | 0-2.5 |
| MW-2 | 5/10/00 | Clearwater | 2 | 20 | 0-5 | 5-20 | 0.02 | 4.5-20 | 2.5-4.5 | 0-2.5 |
| MW-3 | 5/10/00 | Clearwater | 2 | 20 | 0-5 | 5-20 | 0.02 | 4.5-20 | 2.5-4.5 | 0-2.5 |
| MW-4 | 5/10/00 | Clearwater | 2 | 20 | 0-5 | 5-20 | 0.02 | 4.5-20 | 2.5-4.5 | 0-2.5 |
| MW-5 | 8/8/01 | Clearwater | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| MW-6 | 8/8/01 | Clearwater | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| MW-7 | 8/8/01 | Clearwater | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| MW-8 | 8/8/01 | Clearwater | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| MW-9 | 6/16/04 | Blue Rock | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| MW-10 | 6/16/04 | Blue Rock | 2 | 25 | 0-5 | 5-25 | 0.01 | 4-25 | 3-4 | 0-3 |
| DOM-1 | unknown | unknown | 6 | 45 | unknown | unknown | unknown | unknown | unknown | unknown |

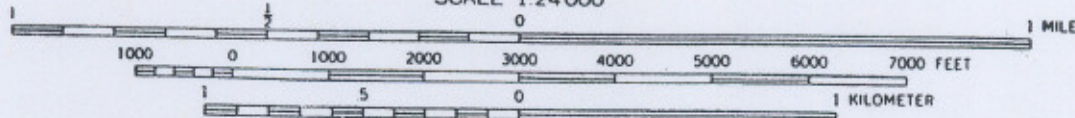
Table 4
GROUNDWATER MONITORING SCHEDULE
 Elliott's Service Center, 761 Eel River Drive, Loleta, CA
 Blue Rock Project # NC-002

| Well | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter | Notes |
|-------|-------------|-------------|-------------|-------------|----------------|
| MW-1 | X | X | X | X | Nearly ND well |
| MW-2 | X | X | X | X | Impacted well |
| MW-3 | X | | | | ND well |
| MW-4 | X | X | X | X | Impacted well |
| MW-5 | X | | X | | Nearly ND well |
| MW-6 | X | | X | | Nearly ND well |
| MW-7 | X | | X | | ND well |
| MW-8 | X | | | | ND well |
| MW-9 | X | X | X | X | Nearly ND well |
| MW-10 | X | X | X | X | Nearly ND well |

Samples from all monitoring wells will be analyzed for TPHg, BTEX and MTBE by EPA Method 8260B.



SCALE 1:24000



CONTOUR INTERVAL 40 FEET

MAP SOURCE: USGS Fields Landing, CA
Quadrangle

Site Location Map
Former Elliott's Service Center
761 Eel River Drive
Loleta, California

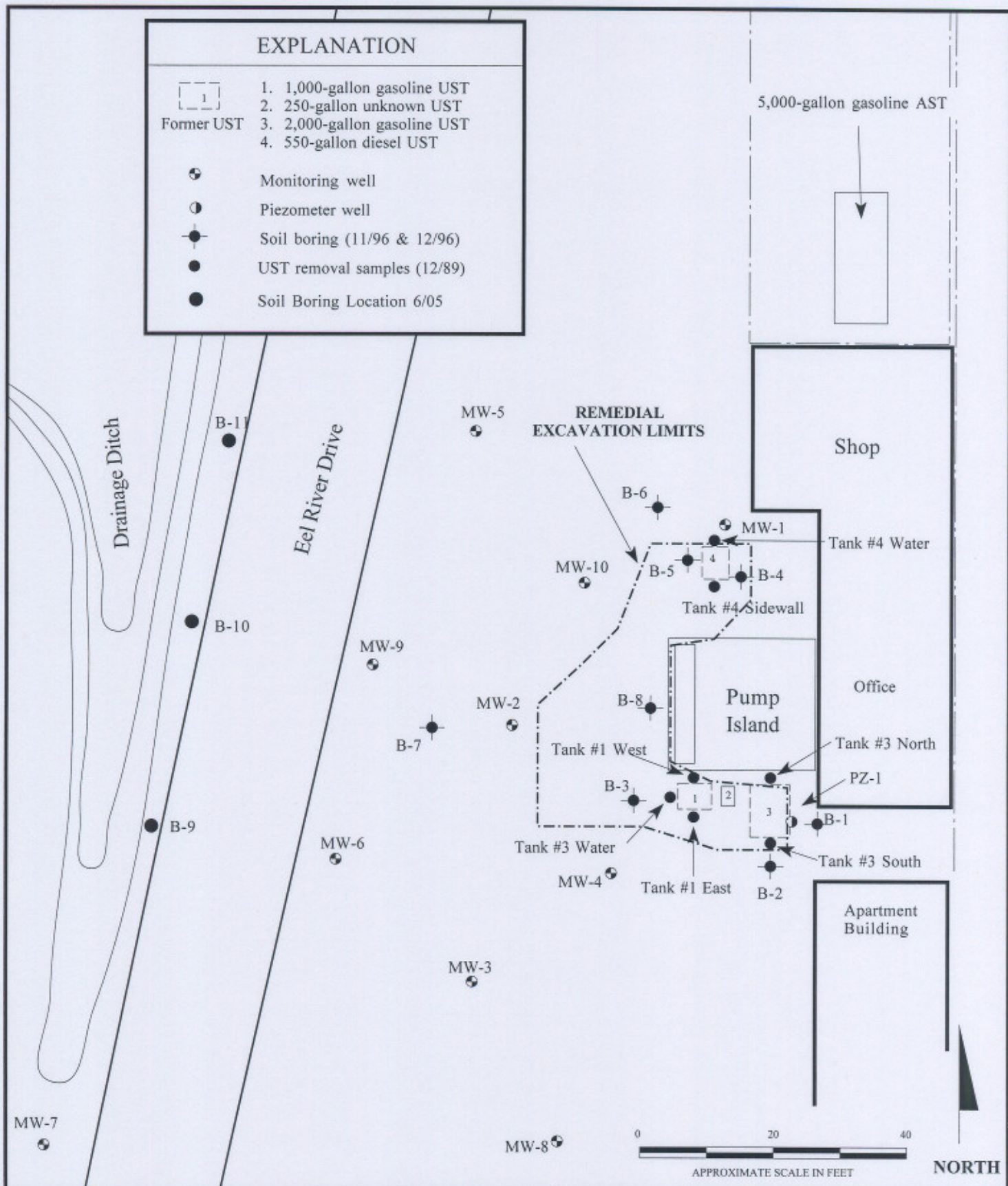


BLUE ROCK
ENVIRONMENTAL, INC.

Project No.
NC-002

Date
5/04

Figure
1



Site Plan

Elliott's Service Center
761 Eel River Drive
Loleta, California




BLUE ROCK
ENVIRONMENTAL, INC.


Project No.
NC-002


Report Date
12/05


Figure
2

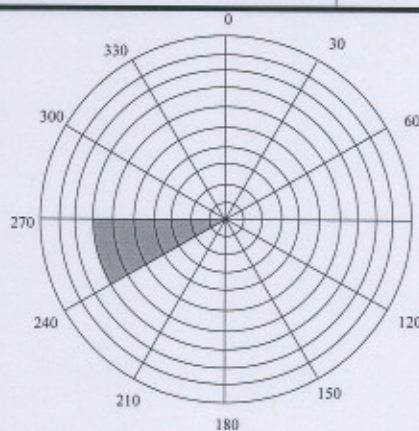
EXPLANATION

-  Former UST
 1. 1,000-gallon gasoline UST
 2. 250-gallon unknown UST
 3. 2,000-gallon gasoline UST
 4. 550-gallon diesel UST

 MW-1 (16.30)
 Monitoring well and groundwater elevation in feet above mean sea level.

 16.0'
 Groundwater elevation contour in feet


 Approximate groundwater flow direction and gradient



ROSE DIAGRAM OF
GROUNDWATER FLOW DIRECTION
FROM 2/04 TO 11/05

5,000-gallon
gasoline AST

Shop

Office

Pump
Island

Apartment
Building

MW-5
(15.63)

MW-10
(16.22)

MW-1
(16.30)

MW-9
(15.55)

MW-2
(15.81)

MW-4
(16.06)

MW-6
(15.33)

MW-3
(15.60)

MW-7
(12.26)

MW-8
(15.65)

0.04 ft/ft

16.0

0 20 40
APPROXIMATE SCALE IN FEET

NORTH

Groundwater Elevations and Gradient - 11/1/05

Elliott's Service Center
 761 Eel River Drive
 Lolo, California



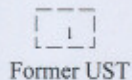
BLUE ROCK
ENVIRONMENTAL, INC.

Project No.
 NC-2

Report Date
 12/05

Figure
 3

EXPLANATION



Former UST



Monitoring well sample on 11/1/05



Soil boring with grab groundwater sample on 6/28/05

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

Groundwater analytical results. TPHg (Total Petroleum Hydrocarbons as gasoline and diesel, benzene (B), and methyl tertiary butyl ether (MTBE) by EPA Method 5030/8260B. All results in µg/L. <# indicates non-detect above instrument detection limit. Concentrations shaded in grey are from most recent sampling events.

µg/L = micrograms per liter

5,000-gallon gasoline AST



Shop

Office

Pump Island

Apartment Building

Drainage Ditch

Eel River Drive

MW-5

TPHd <50
TPHg <50
B <0.5
MTBE = 1.5

MW-1

TPHg <50
B <0.5
MTBE = 4.9

MW-10

TPHg = 160
B = 6.3
MTBE <0.5

TPHg = 440
B = 4.8
MTBE = 3.7

MW-9

TPHg = 500
B <0.5
MTBE = 9.4

MW-2

MW-6

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

B-9

TPHd <50
TPHg <50
B <0.5
MTBE = 2.1

B-10

TPHd <50
TPHg <50
B <0.5
MTBE = 3.0

B-11

MW-3

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

MW-4

TPHg = 1,100
B = 4.4
MTBE = 0.68

TPHg = 100 µg/L

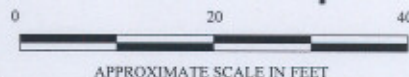
TPHg = 1,000 µg/L

MW-8

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

MW-7



APPROXIMATE SCALE IN FEET

NORTH

Dissolved-Phase TPHg Distribution Map - 11/1/05

Elliott's Service Center
761 Eel River Drive
Loleta, California



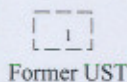
BLUE ROCK
ENVIRONMENTAL, INC.

Project No.
NC-2

Report Date
12/05

Figure
4a

EXPLANATION



Former UST



Monitoring well sample on 11/1/05

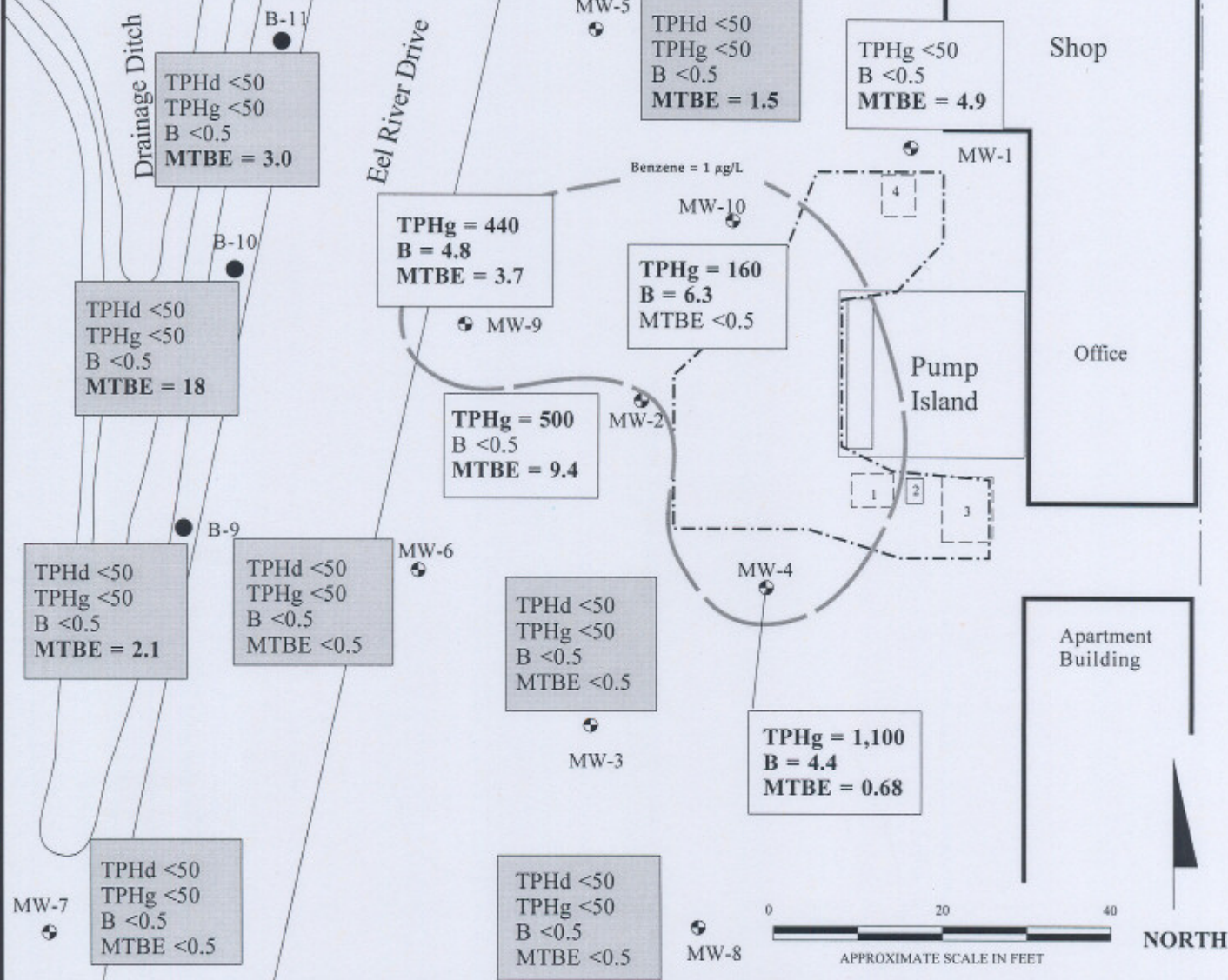


Soil boring with grab groundwater sample on 6/28/05

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

Groundwater analytical results. TPHg (Total Petroleum Hydrocarbons as gasoline and diesel, benzene (B), and methyl tertiary butyl ether (MTBE) by EPA Method 5030/8260B. All results in µg/L. <# indicates non-detect above instrument detection limit. Concentrations shaded in grey are from most recent sampling events.

µg/L = micrograms per liter



Dissolved-Phase Benzene Distribution Map -11/1/05

Elliott's Service Center
761 Eel River Drive
Loleta, California



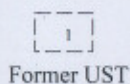
BLUE ROCK
ENVIRONMENTAL, INC.

Project No.
NC-002

Report Date
12/05

Figure
4b

EXPLANATION



Former UST



Monitoring well sample on 11/1/05



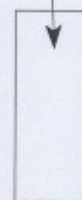
Soil boring with grab groundwater sample on 6/28/05

TPHd <50
TPHg <50
B <0.5
MTBE <0.5

Groundwater analytical results. TPHg (Total Petroleum Hydrocarbons as gasoline and diesel, benzene (B), and methyl tertiary butyl ether (MTBE) by EPA Method 5030/8260B. All results in µg/L. <# indicates non-detect above instrument detection limit. Concentrations shaded in grey are from most recent sampling events.

µg/L = micrograms per liter

5,000-gallon gasoline AST



TPHg <50
B <0.5
MTBE = 4.9

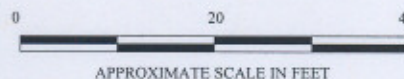
Shop

Office

Pump Island

Apartment Building

NORTH



APPROXIMATE SCALE IN FEET

Dissolved-Phase MTBE Distribution Map - 11/1/05

Elliott's Service Center
761 Eel River Drive
Loleta, California

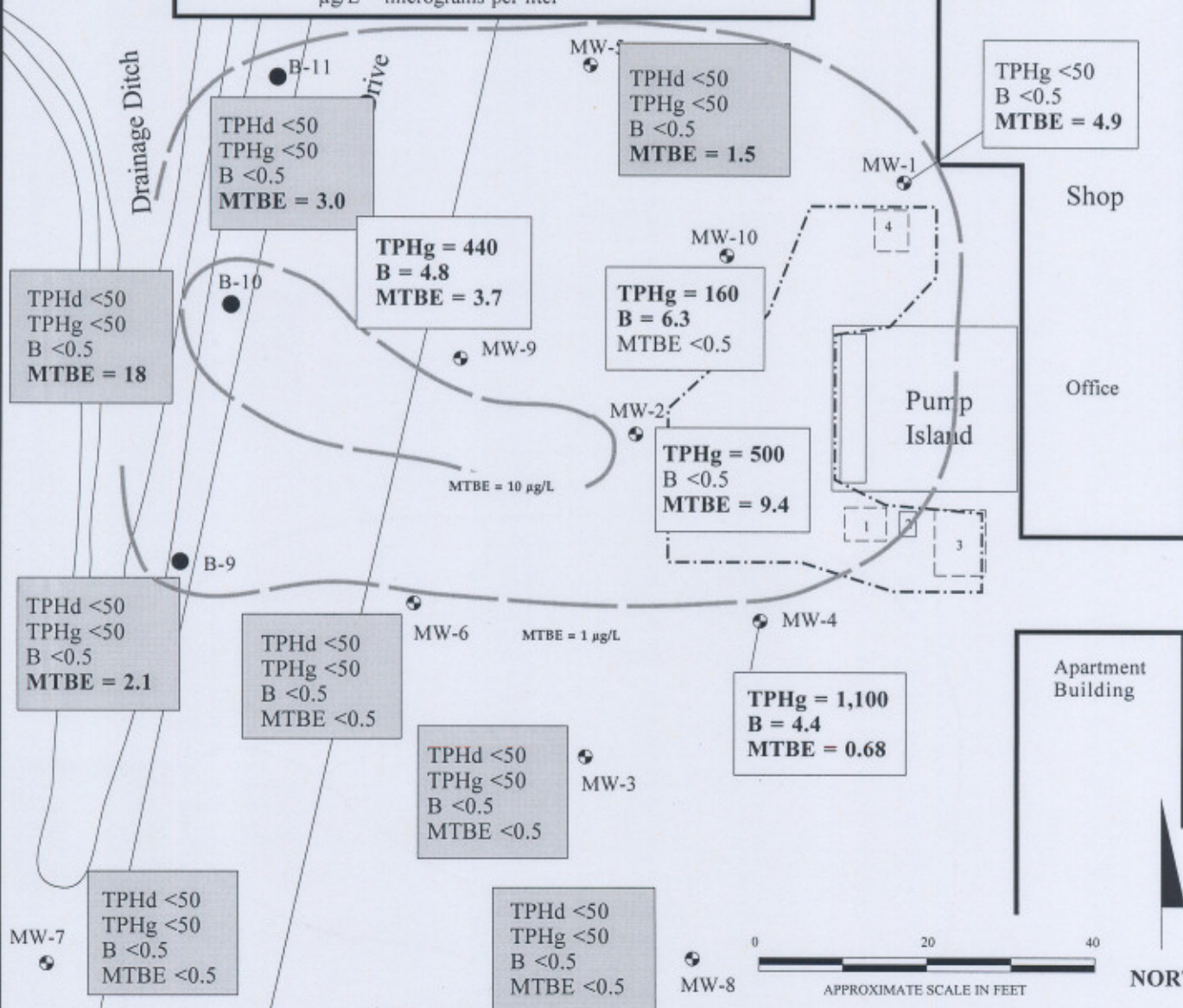


BLUE ROCK
ENVIRONMENTAL, INC.

Project No.
NC-002

Report Date
12/05

Figure
4c



GAGING DATA/PURGE CALCULATIONS

Job No.: NC-2 Location: 761 Eel River Dr. Date: 11/1/05 Tech(s): JL

| WELL NO. | DIA. (in.) | DTB (ft.) | DTW (ft.) | ST (ft.) | CV (gal.) | PV (gal.) | SPH (ft.) | NOTES |
|----------|------------|-----------|-----------|----------|-----------|-----------|-----------|-------------|
| MW-1 | 2" | 18.70 | 13.27 | 5.43 | 0.86 | 2.58 | 0 | D.O. = 5.08 |
| MW-2 | | 19.63 | 13.00 | 6.63 | 1.06 | 3.18 | | D.O. = 6.41 |
| MW-3 | | 19.54 | 13.15 | 6.39 | 1.02 | 3.06 | | D.O. = 4.43 |
| MW-4 | | 17.20 | 13.08 | 4.12 | 0.65 | 1.95 | | D.O. = 3.25 |
| MW-5 | | 24.06 | 12.65 | 11.41 | 1.82 | 5.46 | | D.O. = 5.31 |
| MW-6 | | 24.34 | 13.25 | 11.09 | 1.77 | 5.31 | | D.O. = 5.54 |
| MW-7 | | 24.20 | 17.03 | 7.17 | 1.14 | 3.42 | | D.O. = 4.65 |
| MW-8 | | 22.50 | 13.24 | 9.26 | 1.48 | 4.44 | | D.O. = 6.17 |
| MW-9 | | 23.91 | 12.73 | 11.18 | 1.78 | 5.34 | | D.O. = 5.11 |
| MW-10 | ✓ | 24.93 | 12.56 | 12.37 | 1.97 | 5.91 | ✓ | D.O. = 4.23 |
| | | | | | | | | |
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Explanation:

DIA. = Well Diameter

DTB = Depth to Bottom

DTW = Depth to Water

ST = Saturated Thickness (DTB-DTW)

CV = Casing Volume (ST x cf)

PV = Purge Volume (standard 3 x CV,
well development 10 x CV)

SPH = Thickness of Separate Phase Hydrocarbons

Conversion Factors (cf):

2 in. dia. well cf = 0.16 gal./ft.

4 in. dia. well cf = 0.65 gal./ft.

6 in. dia. well cf = 1.44 gal./ft.



BLUE ROCK
ENVIRONMENTAL, INC.

PURGING DATA

SHEET 1 OF 2

Job No.: NC-2 Location: 761 Eel River Dr. Date: 11/1/05 Tech: JL

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|--|-------|---------------|---------------|-----------------|------|
| MW-1 | | | --- | --- | --- |
| Calc. purge | 9:50 | 0.25 | 274 | 59.9 | 6.12 |
| volume | 9:55 | 1.25 | 162 | 59.8 | 5.89 |
| 2.58 | 10:00 | 2.60 | 152 | 59.5 | 5.65 |
| Sample for: | | | | | |
| TPH g TPHd 8260 | | | | | |
| BT EX MT BE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| Clear / mod. / mod. / ^{no} sheen / ^{no} odor | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |

Sample at: 10:05

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|-------|---------------|---------------|-----------------|------|
| MW-2 | | | --- | --- | --- |
| Calc. purge | 10:10 | 0.25 | 231 | 61.3 | 5.45 |
| volume | 10:15 | 1.50 | 256 | 61.3 | 5.48 |
| 3.18 | 10:20 | 3.20 | 222 | 61.0 | 5.54 |
| Sample for: | | | | | |
| TPH g TPHd 8260 | | | | | |
| BT EX MT BE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| Clear / heavy / mod. / ^{no} sheen / ^{HC} odor | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |

Sample at: 10:25

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|--|-------|---------------|---------------|-----------------|------|
| MW-4 | | | --- | --- | --- |
| Calc. purge | 10:30 | 0.25 | 209 | 62.3 | 5.35 |
| volume | 10:35 | 1.00 | 209 | 62.4 | 5.29 |
| 1.95 | 10:40 | 2.00 | 204 | 62.0 | 5.37 |
| Sample for: | | | | | |
| TPH g TPHd 8260 | | | | | |
| BT EX MT BE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| Clear / mod. / mod. / ^{no} sheen / ^{HC} odor | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |

Sample at: 10:45

PURGING DATA

SHEET 2 OF 2

Job No.: NC-2 Location: 761 Kel River Dr Date: 11/1/05 Tech: JL

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|-------|---------------|---------------|-----------------|------|
| MW-9 | | | --- | --- | --- |
| Calc. purge | 10:50 | 0.25 | 198 | 63.6 | 5.15 |
| volume | 10:55 | 2.50 | 158 | 61.7 | 5.13 |
| 5.34 | 11:00 | 5.35 | 153 | 61.3 | 5.11 |
| Sample for: | | | | | |
| TPHg TPHd 8260 | | | | | |
| BTEx MTBE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| clear/heavy/good/no sheen/no odor | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |
| Sample at: 11:05 | | | | | |

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|-------|---------------|---------------|-----------------|------|
| MW-10 | | | --- | --- | --- |
| Calc. purge | 11:10 | 0.25 | 144 | 62.3 | 4.94 |
| volume | 11:15 | 2.75 | 134 | 60.3 | 4.92 |
| 5.91 | 11:20 | 5.95 | 129 | 60.0 | 4.94 |
| Sample for: | | | | | |
| TPHg TPHd 8260 | | | | | |
| BTEx MTBE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| clear/heavy/mod/no sheen/no odor | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |
| Sample at: 11:25 | | | | | |

| WELL No. | TIME | VOLUME (gal.) | COND. (mS/cm) | TEMP. (deg. F.) | pH |
|---|------|---------------|---------------|-----------------|-----|
| | | | --- | --- | --- |
| Calc. purge | | | | | |
| volume | | | | | |
| | | | | | |
| Sample for: | | | | | |
| TPHg TPHd 8260 | | | | | |
| BTEx MTBE Metals | | | | | |
| Purging Method: | | | | | |
| PVC bailer / Pump | | | | | |
| COMMENTS: color, turbidity, recharge, sheen | | | | | |
| | | | | | |
| Sampling Method: | | | | | |
| Dedicated / Disposable bailer | | | | | |
| Sample at: | | | | | |



Report Number : 46720

Date : 11/8/2005

Scott Ferriman
Blue Rock Environmental, Inc.
535 3rd Street, Suite 100
Eureka, CA 95501

Subject : 5 Water Samples
Project Name : Elliot's
Project Number : NC-2

Dear Mr. Ferriman,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

A handwritten signature in black ink, appearing to read "Joel Kiff".

Joel Kiff



Report Number : 46720

Date : 11/8/2005

Project Name : Elliot's

Project Number : NC-2

Sample : MW-1

Matrix : Water

Lab Number : 46720-01

Sample Date :11/1/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|------------|-----------------|---------------|
| Benzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Ethylbenzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-t-butyl ether (MTBE) | 4.9 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | < 50 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - d8 (Surr) | 99.4 | | % Recovery | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 105 | | % Recovery | EPA 8260B | 11/3/2005 |

Sample : MW-2

Matrix : Water

Lab Number : 46720-02

Sample Date :11/1/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|------------|-----------------|---------------|
| Benzene | 0.54 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/4/2005 |
| Ethylbenzene | 10 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | 20 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-t-butyl ether (MTBE) | 9.4 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | 500 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - d8 (Surr) | 99.4 | | % Recovery | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 107 | | % Recovery | EPA 8260B | 11/3/2005 |

Approved By:

Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800



Report Number : 46720

Date : 11/8/2005

Project Name : Elliot's

Project Number : NC-2

Sample : MW-4

Matrix : Water

Lab Number : 46720-03

Sample Date :11/1/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|------------|-----------------|---------------|
| Benzene | 4.4 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Ethylbenzene | 40 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | 10 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-t-butyl ether (MTBE) | 0.68 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | 1100 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - d8 (Surr) | 98.6 | | % Recovery | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 107 | | % Recovery | EPA 8260B | 11/3/2005 |

Sample : MW-9

Matrix : Water

Lab Number : 46720-04

Sample Date :11/1/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|------------|-----------------|---------------|
| Benzene | 4.8 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | 0.62 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Ethylbenzene | 22 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | 17 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-t-butyl ether (MTBE) | 3.7 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | 440 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - d8 (Surr) | 99.9 | | % Recovery | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 106 | | % Recovery | EPA 8260B | 11/3/2005 |

Approved By:

Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800



Report Number : 46720

Date : 11/8/2005

Project Name : Elliot's

Project Number : NC-2

Sample : MW-10

Matrix : Water

Lab Number : 46720-05

Sample Date : 11/1/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|------------|-----------------|---------------|
| Benzene | 6.3 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Ethylbenzene | 1.2 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | 15 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-t-butyl ether (MTBE) | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | 160 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - d8 (Surr) | 100 | | % Recovery | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 107 | | % Recovery | EPA 8260B | 11/3/2005 |

Approved By:

Joel Kiff

2795 2nd St., Suite 300 Davis, CA 95616 530-297-4800

QC Report : Method Blank Data

Project Name : **Elliot's**

Project Number : **NC-2**

Report Number : 46720

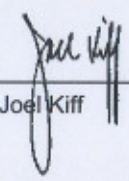
Date : 11/8/2005

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------------------------|----------------|------------------------|-------|-----------------|---------------|
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/4/2005 |
| Benzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Ethylbenzene | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Total Xylenes | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| Methyl-4-butyl ether (MTBE) | < 0.50 | 0.50 | ug/L | EPA 8260B | 11/3/2005 |
| TPH as Gasoline | < 50 | 50 | ug/L | EPA 8260B | 11/3/2005 |
| Toluene - dB (Surr) | 100 | | % | EPA 8260B | 11/3/2005 |
| 4-Bromofluorobenzene (Surr) | 106 | | % | EPA 8260B | 11/3/2005 |

| Parameter | Measured Value | Method Reporting Limit | Units | Analysis Method | Date Analyzed |
|-----------|----------------|------------------------|-------|-----------------|---------------|
|-----------|----------------|------------------------|-------|-----------------|---------------|

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By:  Joel Kiff

QC Report : Matrix Spike/ Matrix Spike Duplicate

Report Number : 46720

Date : 11/8/2005

Project Name : Elliot's

Project Number : NC-2

| Parameter | Spiked Sample | Sample Value | Spike Level | Spike Dup. Level | Spiked Sample Value | Duplicate Spiked Sample Value | Units | Analysis Method | Date Analyzed | Spiked Sample Percent Recov. | Duplicate Spiked Sample Percent Recov. | Relative Percent Diff. | Spiked Sample Percent Recov. Limit | Relative Percent Diff. Limit |
|----------------------|---------------|--------------|-------------|------------------|---------------------|-------------------------------|-------|-----------------|---------------|------------------------------|--|------------------------|------------------------------------|------------------------------|
| Benzene | 46720-02 | <0.50 | 40.0 | 40.0 | 37.8 | 36.6 | ug/L | EPA 8260B | 11/4/05 | 94.6 | 91.4 | 3.36 | 70-130 | 25 |
| Toluene | 46720-02 | <0.50 | 40.0 | 40.0 | 36.4 | 35.2 | ug/L | EPA 8260B | 11/4/05 | 91.0 | 88.1 | 3.22 | 70-130 | 25 |
| Tert-Butanol | 46720-02 | <5.0 | 200 | 200 | 200 | 195 | ug/L | EPA 8260B | 11/4/05 | 100 | 97.4 | 2.69 | 70-130 | 25 |
| Methyl-t-Butyl Ether | 46720-02 | 9.5 | 40.0 | 40.0 | 52.7 | 48.9 | ug/L | EPA 8260B | 11/4/05 | 108 | 98.5 | 9.33 | 70-130 | 25 |
| Benzene | 46736-03 | <0.50 | 40.0 | 40.0 | 40.4 | 39.0 | ug/L | EPA 8260B | 11/3/05 | 101 | 97.6 | 3.47 | 70-130 | 25 |
| Toluene | 46736-03 | <0.50 | 40.0 | 40.0 | 40.3 | 38.8 | ug/L | EPA 8260B | 11/3/05 | 101 | 97.1 | 3.83 | 70-130 | 25 |
| Tert-Butanol | 46736-03 | <5.0 | 200 | 200 | 215 | 215 | ug/L | EPA 8260B | 11/3/05 | 108 | 107 | 0.0964 | 70-130 | 25 |
| Methyl-t-Butyl Ether | 46736-03 | 2.0 | 40.0 | 40.0 | 44.2 | 43.3 | ug/L | EPA 8260B | 11/3/05 | 105 | 103 | 2.17 | 70-130 | 25 |

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By: Joel Kiff



QC Report : Laboratory Control Sample (LCS)

Report Number : 46720

Date : 11/8/2005

Project Name : Elliot's

Project Number : NC-2


| Parameter | Spike Level | Units | Analysis Method | Date Analyzed | LCS Percent Recov. | LCS Percent Recov. Limit |
|----------------------|-------------|-------|-----------------|---------------|--------------------|--------------------------|
| Benzene | 40.0 | ug/L | EPA 8260B | 11/4/05 | 100 | 70-130 |
| Toluene | 40.0 | ug/L | EPA 8260B | 11/4/05 | 101 | 70-130 |
| Tert-Butanol | 200 | ug/L | EPA 8260B | 11/4/05 | 104 | 70-130 |
| Methyl-t-Butyl Ether | 40.0 | ug/L | EPA 8260B | 11/4/05 | 110 | 70-130 |
| Benzene | 40.0 | ug/L | EPA 8260B | 11/3/05 | 100 | 70-130 |
| Toluene | 40.0 | ug/L | EPA 8260B | 11/3/05 | 104 | 70-130 |
| Tert-Butanol | 200 | ug/L | EPA 8260B | 11/3/05 | 105 | 70-130 |
| Methyl-t-Butyl Ether | 40.0 | ug/L | EPA 8260B | 11/3/05 | 99.3 | 70-130 |

KIFF ANALYTICAL, LLC

2795 2nd St, Suite 300 Davis, CA 95616 530-297-4800

Approved By:

Joel Kiff





2795 2nd Street, Suite 300
Davis, CA 95616
Lab: 530.297.4800
Fax: 530.297.4802

SRG # / Lab No.

46720

Page 1 of 1

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---------|--|-------------------|---|--------|----------------------------------|-----------------|--------|-----|------------------|------|-------|------|-----|---|----------------------------|------------------|---------------------|--------------------------|--------------------------------|--|----------------------------------|---|--|---------------------------|--------------------------------|-----------------------|--------------------|--|-----|
| Project Contact (Hardcopy or PDF To): <u>Scott Ferriman</u> | | California EDF Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Chain-of-Custody Record and Analysis Request | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Company / Address: <u>Blue Rock Env. Inc.</u> <u>535 3rd St. Ste. 100 Eureka, CA</u> | | Sampling Company Log Code: | | Analysis Request | | | | | | | | | | | | | | | | TAT | | | | | | | | | | |
| Phone #: <u>(707) 441-1934</u> | | Fax #: <u>(707) 441-1949</u> | | Global ID: <u>T0602300155</u> | | | | | | | | | | | | | | | | | | <input type="checkbox"/> 12 hr | | | | | | | | |
| Project #: <u>NC-2</u> | | P.O. #: | | EDF Deliverable To (Email Address): <u>scott@bluerockenv.com</u> | | | | | | | | | | | | | | | | | | <input type="checkbox"/> 24 hr | | | | | | | | |
| Project Name: <u>Elliott's</u> | | Sampler Signature: <u>Damee Lindeman</u> | | | | | | | | | | | | | | | | | | <input type="checkbox"/> 48 hr | | | | | | | | | | |
| Project Address: <u>761 Eel River Dr.</u> <u>Lolita, CA</u> | | Sampling | | Container | | Preservative | | Matrix | | | | | | | | | | | | | | | | | | <input type="checkbox"/> 72 hr | | | | |
| Sample Designation | | Date | Time | 40 ml VOA | Sleeve | Poly | Glass | Tedlar | HCl | HNO ₃ | None | Water | Soil | Air | MTBE (EPA 8260B) per EPA 8021 level @ 5.0 ppb | MTBE (EPA 8260B) @ 0.5 ppb | BTEX (EPA 8260B) | TPH Gas (EPA 8260B) | 5 Oxygenates (EPA 8260B) | 7 Oxygenates (EPA 8260B) | Lead Scav. (1.2 DCA & 1.2 EDB-EPA 8260B) | Volatile Halocarbons (EPA 8260B) | Volatile Organics Full List (EPA 8260B) | Volatile Organics (EPA 524.2 Drinking Water) | TPH as Diesel (EPA 8015M) | TPH as Motor Oil (EPA 8015M) | Total Lead (EPA 6010) | W.E.T. Lead (STLC) | <input checked="" type="checkbox"/> 1 wk | |
| MW-1 | 11/1/05 | 10:05 | 3 | | | | | | X | | | X | | | X | X | X | | | | | | | | | | | | X | -01 |
| MW-2 | | 10:25 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | -02 |
| MW-4 | | 10:45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | -03 |
| MW-9 | | 11:05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | -04 |
| MW-10 | | 11:25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | -05 |
| Relinquished by: <u>Damee Lindeman</u> | | Date: <u>11/1/05</u> | Time: | Received by: <u>Fed Ex</u> | | Remarks: | | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: _____ | | Date: | Time: | Received by: _____ | | Bill to: | | | | | | | | | | | | | | | | | | | | | | | | |
| Relinquished by: _____ | | Date: <u>110205</u> | Time: <u>1111</u> | Received by Laboratory: <u>KIFF Analytical</u> | | For Lab Use Only: Sample Receipt | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Temp °C | Initials | Date | Time | Therm. ID # | Coolant Present | | | | | | | | | | | | | | | | | | | | | | | |
| | | 4.2°C | BHB | 110205 | 1111 | 12-1 | Yes / No | | | | | | | | | | | | | | | | | | | | | | | |

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION



APPENDIX A - REPORTS
TRI - REGIONAL BOARD STAFF
RECOMMENDATIONS
FOR PRELIMINARY INVESTIGATION AND
EVALUATION OF UNDERGROUND TANK SITES

16 April 2004

Prepared by Staff of the
Central Valley Regional Water Quality Control Board

*State of California
California Environmental Protection Agency*

**REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION**

*Robert Schneider, Chair
Karl Longley, Vice Chair
Beverly Alves, Member
Alson Brizard, Member
Christopher Cabaldon, Member
Cher Kablanow, Member
Robert Fong, Member
Lucille Palmer-Byrd, Member*

Thomas R. Pinkos, Executive Officer

11020 Sun Center Drive #200
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Phone: (916) 464-3291

DISCLAIMER

*This publication is a technical report by staff of the
California Central Valley Region. No policy or regulation is either
expressed or intended. This publication does not constitute
Regional Board endorsement or recommendation for,
or against, the information, technology or products.*

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APPENDIX A

CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD

STAFF RECOMMENDATIONS FOR REPORTING

AT

SITES CONTAMINATED

BY

UNDERGROUND STORAGE TANK RELEASES

1.0 INTRODUCTION

Appendix A to the *Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Storage Tank Sites* (Tri-Regional Recommendations) provides recommendations from Region 5 (Central Valley RWQCB) staff for reporting work for: site investigations, corrective actions, and no further action required documentation associated with leaking underground storage tank (UST) sites. Adherence to recommendations in Appendix A facilitates efficient regulatory review of investigations and cleanups at UST sites and assures compliance with UST Regulations found in CCR Title 23, Chapter 16.

Recommendations in Appendix A:

- Provide a format for consistency of documents;
- Reduce cost of reporting to dischargers and the UST Cleanup Fund by providing the dischargers and environmental consultants with information for developing complete workplans and reports.
- Complete the investigative phase in a timely, cost-effective and efficient manner; and
- Insure the appropriate remedial action is completed as quickly as possible.

1.1 Authority

The authority for Regional Board and Lead Agencies to direct UST investigations is found in the following:

- Porter-Cologne Water Quality Control Act (also known as the California Water Code Section 13000 ff.);
- The Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region (Sacramento River Basin, San Joaquin River Basin and Tulare Lake Basin – current editions), which include beneficial use designations, water quality objectives and implementation plans (especially the *Policy for Investigation and Cleanup of Contaminated Sites*);
- State Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality Water in California;
- State Board Resolution No. 88-63, Sources of Drinking Water;
- State Board Resolution No. 92-49: Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304, as amended;

- Chapter 6.7 of the Health and Safety Code: Underground Storage of Hazardous Substances;
- Title 23, Division 3, Chapter 16 of the California Code of Regulations, Underground Storage Tank Regulations, Sections 2610 through 2729 - with current amendments. (Regulation sections as shown in the Underground Storage Tank Regulations, are designated; e.g. - §2652);
- Title 23, Division 3, Chapter 15 of the California Code of Regulations, Water Monitoring; and
- Department of Water Resources (DWR) Bulletin 74-81 and 74-90, California Well Standards for installing, maintaining, and destroying all wells and exploratory borings (boreholes).

1.2 Reference Documents

- Central Valley Regional Water Quality Control Board staff report, *A Compilation of Water Quality Goals*, available on the internet at:
http://www.swrcb.ca.gov/rwqcb5/available_documents/wq_goals.

These protocol and procedures are not new, but rather, documents that have been made available to responsible parties since the inception of the Central Valley Regional Board leaking UST program.

2.0 REPORTING RECOMMENDATIONS AND LEGAL REQUIREMENTS

General report recommendations are as follows:

1. By submitting a report or work plan to the Local Implementing Agency (LIA) and the Regional Board, the discharger acknowledges the statement of facts, conclusions, and recommendations included in the report or work plan. A cover letter, signed by the responsible party(s), should accompany all

reports and workplans expressing argument or disagreement with the contents.

2. Reports and workplans should have pagination and a table of contents listing the enclosed tables, figures, and appendices as applicable.
3. Time schedules should be included in all workplans and remedial action plans showing key steps to site investigation and cleanup.
4. Each report should be presented as a stand-alone document to assure that it may be reviewed independently, and must include conclusions and recommendations. It is not acceptable to reference a table, figure, or borehole log in another report.
5. Technical assistance for completing reports and workplans may be provided by environmental consultants in the private sector. Reports, documents, and plans that contain engineering, geology, and/or geophysical information must be prepared under the "responsible charge" of properly licensed (professional) individuals in the State of California (See Sections 6735, 7835, and 7835.1 of the California Business and Professions Code). This assures the regulatory agencies of a registered professionals responsibility for preparing accurate technical documents and protects the discharger's interests. The signature and professionals stamp (seal) of the licensed individual indicates responsibility for the technical information submitted. More than one signature may be required where more than one professional specialty is included in the technical document submitted.
6. All geologic logs (borehole and monitoring well logs) shall be prepared by a professional geologist or civil engineer (see #5 above) who is registered or certified by the State of California and who is experienced in the use of the Unified Soil Classification System. The geologic logs may also be prepared by a qualified technician trained and experienced in the use of the Unified Soil

Classification System working under the direct supervision of one of the aforementioned professionals, provided that the professional reviews the logs and assumes responsibility for the accuracy and completeness of the logs. (See Section 2649 of Title 23, Division 3, Chapter 16 of the California Code of Regulations).

7. All monitoring wells, extraction wells, etc and exploratory boreholes are to follow local ordinances and the guidance and requirements of the DWR Bulletin 74-81 and 74-90, California Well Standards. The text for Bulletin 74-81 and 74-90 may be downloaded and printed from the DWR website at dwr.water.ca.gov, and click on the "publications" button.
8. Printed or electronic reports are to be submitted to both Regional Board and LIA agencies.
9. As of September 2001, dischargers are also to submit analytical and site data electronically to the State Water Resources Control Board (SWRCB) at the same time as the hard copy reports. For more information, please log on to the SWRCB web site at: <http://geotracker.swrcb.ca.gov> and click on the information link to "AB 2886". (See Sections 2729 and 2729.1 of Title 23, Division 3, Chapter 16 of the California Code of Regulations).
10. As of January 2002, in addition to the laboratory data, site specific information is required to be submitted electronically for the following: 1) the latitude and longitude of groundwater monitoring wells (including any other well or permanent sampling point designated as part of the site monitoring program) accurate to within one meter; 2) the surveyed elevation, relative to mean sea level, for any groundwater sampled, accurate to within a tenth of a foot; 3) groundwater information, including depth to water, free product presence/thickness and well status; and 4) a site map in electronic format showing property boundaries, buildings, and soil and water sampling locations. (See Sections

2729 and 2729.1 of Title 23, Division 3, Chapter 16 of the California Code of Regulations).

3.0 INVESTIGATION PROCESS

After notification of the unauthorized release to the LIA agency, the lead agency is determined and the investigation and reporting process initially begins with a Site Investigation Workplan to collect soil or soil and groundwater samples for analysis of potential contaminants. All workplans and reports prepared for investigation and remedial actions are to be submitted to both the LIA and the Regional Board. The lead agency will review the workplan and send a letter to the discharger listing conditions of approval, or requesting additional information prior to approval of the proposed workplan.

Responsible parties seeking reimbursement funding from the UST Cleanup Fund will also need to submit all workplans with regulatory approval letters to the UST Cleanup Fund for review and pre-approval of costs.

Note: The lack of funding by the UST Cleanup Fund does not relieve responsible parties from their responsibility to perform work required by the Regional Board or a local enforcement agency pursuant to the Water Code or the Health & Safety Code. Amended time schedules may be considered to accommodate funding constraints.

3.1 Site Investigation Workplan - §2654, §2723

Once a release of petroleum hydrocarbon to soil has been detected, soil problems that cannot be resolved by a "scoop and run" cleanup may remain to be further identified and remediated. To successfully achieve site cleanup, subsequent site investigations must define (to the non-detect limits) the lateral and vertical extent of impacted soil and groundwater. An initial Site Investigation Workplan is used to develop preliminary information to direct subsequent work.

Upon approval of the workplan by the lead agency to define the extent of impacted soil and groundwater, the discharger or their consultant must obtain the necessary permits from the LIA, and then

implement the approved Site Investigation Workplan. If workplan revisions are necessary, the discharger may submit a letter addendum briefly detailing any proposed changes to the workplan or additional work.

The following background information is to be included in the initial Site Investigation Workplan:

- Name and address of the site, the discharger and contact person, if different.
- An appropriately scaled area map showing the site location relative to nearby landmarks such as rivers and other surface water features, highways, urban or industrial areas, etc.
- A scaled drawing of the site showing adjacent streets and buildings, all above ground structures including canopies and power lines, underground structures including fuel USTs, utility lines (water, sewer, electrical, natural gas, and communication lines), buried pipes, septic tanks, and leachfields. The map scale should be appropriate to show site features.
- Pertinent information that could influence the migration of contaminants from the site is to be included in the workplan including: topography, climate, local geology and subsurface soil conditions, local and regional hydrogeology, nearby surface waters.
- History of tank installation, type of products stored, operation, and repair.
- Layout of all former and existing USTs and piping systems on the property, with each tank labeled for content.
- History of leaks, spills and accidents at the site involving the tank system and dispensers.
- Tank testing results, dates, and inventory reconciliation methods.
- Summary of initial site information collected during UST removal including:

- Date of tank(s) removal and condition of the tank system;
- Table of soils and/or water analyses;
- Soil sampling and analytical procedures used;
- Stratigraphy identified from excavations or borings;
- Depth to groundwater, if encountered; and
- Description of any unusual site conditions encountered.

- Estimate of the quantity and composition of contaminant released into the environment and how the estimate was derived.
- Include initial abatement actions including a description of liquid or solid wastes removed and where they were disposed with copies of all manifests.

In addition to the background information requested for the Site Investigation Workplan listed above, the methods and procedures that will be used to investigate both impacted soil and groundwater should be included, and an estimated time schedule for completion of proposed work must also be included with the workplan.

Specific to the soil contamination, describe or identify the method, technique, and/or rationale for:

- Collecting soil, soil gas, and sediment samples, as appropriate.
- Determining the number of proposed boreholes, sampling locations, and sampling depths.
- Determining the extent of soil contamination from samples collected.
- Analyzing soil, soil gas, and sediment samples by appropriate federal EPA Methods or other non-proprietary, performance-based analytical procedures.
- Containing and disposing of investigation-derived waste.

- Completing a Quality Assurance/ Quality Control plan including chain-of-custody procedures for field sampling and analysis.

Specific to the groundwater investigation, the workplan is to include the following:

- A proposal to complete a sensitive receptor survey to show water supply wells and surface water bodies within 2,000 feet of the site. With field observation and verification of any wells within 500 feet of the leaking underground storage tank site and attempting to obtain depth of annular seal for those wells.
- A rationale for installing monitoring wells including well location, total depths, screen intervals, and annular seal depth.
- A construction diagram for any proposed monitoring wells including the well diameter, casing and screen type, annular sealing method and depth.
- The drilling method to be implemented and decontamination procedures used between borings.
- The method of well development, and the criteria for selecting the proposed method.
- Disposal plans for soil and purge water.
- Plans for completing a location survey of the installed monitoring wells.
- Free product measurement method.
- Water level measurement procedure.
- Well purging procedure.
- Sample collection procedures.
- Analytical methods to be used and appropriate detection limits. (Analytical laboratories are to report all peaks identified from the soil and groundwater testing, and provide chromatograms as necessary).

- Quality Assurance/ Quality Control plan including chain-of-custody procedures for field sampling and analysis.

3.2 Preliminary Investigation and Evaluation Report (PIER) - §2654, §2723

The soil and groundwater data collected from implementing the Site Investigation Workplan is to be presented in the PIER and used to create the Site Conceptual Model. Information developed for this report will be used to determine what additional work is needed at the site. The PIER is to contain:

- Summarized background information developed from the Site Investigation Workplan and results of the completed sensitive receptor survey.
- The area of investigation is to be accurately delineated on maps and cross sections to scale to depict the lateral and vertical extent of impacted soil and groundwater identified to date.
- Cross sections must include stratigraphy based upon boreholes, trenches, monitoring wells, or any other supporting information, and must show analytical results and construction details for all monitoring wells to demonstrate the degree of impact to groundwater and site soils.
- Tables summarizing analytical data and methodologies used to collect and analyze the samples.
- Depth to groundwater, and calculated groundwater elevation.
- Groundwater quality contoured on a site map for each groundwater unit investigated.
- A graphical and narrative site conceptual model (SCM) showing the extent of known soil contamination and groundwater degradation relative to the leaking UST system and potential receptors. The SCM should be updated as characterization data becomes available, and used to make determinations for future investigations.

Note: To satisfy Basin Plan requirements and Resolution No. 88-63, which states in part "all surface and ground waters of the State are considered to be suitable, or potentially suitable, for municipal or domestic water supply..."see Table 1, for a list of Numerical Water Quality Limits for Petroleum Based Fuel components for protection of existing or potential sources of drinking water.

These Limits change from time-to-time. The current list of numerical limits may be found on the internet at http://www.swrcb.ca.gov/rwqcb5/available_documents/index.html#WaterQualityGoals.

- Appropriate conclusions, and recommendations for additional work, as necessary.

Monitoring well diagrams are to represent the completed well and show or describe the following:

- An accurate depiction of monitoring well construction.
- Types and quantities of materials placed in the borehole.
- Placement method of the annular seal materials, (e.g. pumped through a tremie pipe, or poured from the surface).
- Location of screen interval, transition seal, and sanitary seal details.
- Nominal inner diameter (ID) and outer diameter (OD) of the auger and casing.

- Copies of drillers and/or geologist logs for drilling and construction.
- Appropriate field notes from well development with descriptions of parameter stabilization (e.g. tables showing pH, electrical conductivity, temperature, turbidity, development method, and volume of groundwater purged from the well).
- Type of drilling rig equipment used for well construction, names of the driller and supervising field geologist, plus any difficulties encountered during drilling that could affect the future quality of data from the well.

Workplans and summary reports are to be prepared and submitted to the LIA and Regional Board until the lateral and vertical extent of contamination is defined. The proposed additional work may be submitted separately, or with the quarterly status reports.

Please note that site conditions may warrant interim cleanup and removal actions before the lateral and vertical extent of contamination is completely defined. For interim remedial actions, the discharger shall follow the requirements outlined in the UST Regulations, §2722(b).

Table 1: Water Quality Numerical Limits for Petroleum Fuel Mixtures, Constituents and Additives *

| Constituent | Water Quality Objective (a) | Numerical Limit Interpreting Water Quality Objective | | |
|---|-----------------------------|--|---------|-------|
| | | Source | Limit | Units |
| Aromatic Hydrocarbons: | | | | |
| Benzene | Chemical Constituents | California Primary MCL (b) | 1.0 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 0.15 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 170 | ug/L |
| n-Butylbenzene | Toxicity | California Drinking Water Action Level (DHS) | 260 | ug/L |
| sec-Butylbenzene | Toxicity | California Drinking Water Action Level (DHS) | 260 | ug/L |
| tert-Butylbenzene | Toxicity | California Drinking Water Action Level (DHS) | 260 | ug/L |
| Ethylbenzene | Chemical Constituents | California Primary MCL (b) | 300 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 300 | ug/L |
| | Tastes and Odors | Federal Register, Vol. 54, No. 97, pp. 22138,22139 | 29 | ug/L |
| Isopropyl benzene | Toxicity | USEPA IRIS Reference Dose (i) | 700 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 0.8 | ug/L |
| Toluene | Chemical Constituents | California Primary MCL (b) | 150 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 150 | ug/L |
| | Tastes and Odors | Federal Register, Vol. 54, No. 97, pp. 22138,22139 | 42 | ug/L |
| 1,2,4-Trimethylbenzene | Toxicity | California Public Health Goal (OEHHA) | 330 | ug/L |
| 1,3,5-Trimethylbenzene | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 15 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 330 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 15 | ug/L |
| Xylenes (sum of isomers) | Chemical Constituents | California Primary MCL (b) | 1750 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 1800 | ug/L |
| | Tastes and Odors | Federal Register, Vol. 54, No. 97, pp. 22138,22139 | 17 | ug/L |
| Aliphatic Hydrocarbons: | | | | |
| n-Hexane | Toxicity | USEPA Health Advisory (e) | 400 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 6.4 | ug/L |
| Hydrocarbon Mixtures: | | | | |
| Diesel or Kerosene | Toxicity | USEPA Superfund Provisional Reference Dose (i) | 56-140 | ug/L |
| | Tastes and Odors | Taste & odor threshold from USEPA Health Advisory | 100 | ug/L |
| Gasoline | Toxicity | USEPA Superfund Provisional Cancer Slope Factor (c) | 21 | ug/L |
| | Tastes and Odors | McKee & Wolf, <i>Water Quality Criteria</i> , SWRCB, p. 230 | 5 | ug/L |
| Additives: | | | | |
| Lead | Chemical Constituents | California Primary MCL (b) | 15 | ug/L |
| | Toxicity (h) | California Public Health Goal (OEHHA) | 2 | ug/L |
| Ethylene dibromide (EDB) | Chemical Constituents | California Primary MCL (b) | 0.05 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 0.01 | ug/L |
| Ethylene dichloride (1,2-Dichloroethane) | Chemical Constituents | California Primary MCL (b) | 0.5 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 0.4 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 7000 | ug/L |
| Methyl t-butyl ether (MtBE) | Chemical Constituents | California Primary MCL (b) | 13 | ug/L |
| | Chemical Constituents | California Secondary MCL (f) | 5 | ug/L |
| | Toxicity | California Public Health Goal (OEHHA) | 13 | ug/L |
| | Tastes and Odors | California Secondary MCL | 5 | ug/L |
| Di-isopropyl ether (DIPE) | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 0.8 | ug/L |
| t-Butyl alcohol (TBA) | Toxicity | California Drinking Water Action Level (DHS) | 12 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 290,000 | ug/L |
| Ethanol | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 760,000 | ug/L |
| Methanol | Toxicity | USEPA IRIS Reference Dose (i) | 3500 | ug/L |
| | Tastes and Odors | Amoore and Hautala, <i>J. Applied Tox.</i> , Vol.3, No.6, 1983 | 740,000 | ug/L |

Table 1: Water Quality Numerical Limits for Petroleum Fuel Mixtures, Constituents and Additives (Cont.) *

| Constituent | Water Quality Objective (a) | Numerical Limit Interpreting Water Quality Objective | | | OEHHA |
|--|-----------------------------|--|---------|-------|-----------|
| | | Source | Limit | Units | PEF |
| Polynuclear Aromatic Hydrocarbons (PAHs or PNAs) and derivatives: | | | | | |
| Acenaphthene | Toxicity | USEPA IRIS Reference Dose (i) | 420 | ug/L | |
| | Tastes and Odors | USEPA National Ambient Water Quality Criteria | 20 | ug/L | |
| Anthracene | Toxicity | USEPA IRIS Reference Dose (i) | 2100 | ug/L | |
| Benzo(a)anthracene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Benzo(a)pyrene | Chemical Constituents | California Primary MCL | 0.2 | ug/L | |
| | Toxicity | Public Health Goal | 0.004 | ug/L | 1 (index) |
| Benzo(b)fluoranthene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Benzo(j)fluoranthene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Benzo(k)fluoranthene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Chrysene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.4 | ug/L | 0.01 |
| Dibenz(a,j)acridine | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Dibenz(a,h)acridine | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Dibenz(a,h)anthracene | Toxicity | Cal/EPA Cancer Potency Factor (c) | 0.0085 | ug/L | |
| 7H-Dibenzo(c,g)carbazole | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.004 | ug/L | 1 |
| Dibenzo(a,e)pyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.004 | ug/L | 1 |
| Dibenzo(a,h)pyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.0004 | ug/L | 10 |
| Dibenzo(a,i)pyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.0004 | ug/L | 10 |
| Dibenzo(a,l)pyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.0004 | ug/L | 10 |
| 7,12-Dimethylbenz(a)anthracene | Toxicity | Cal/EPA Cancer Potency Factor (c) | 0.00014 | ug/L | |
| 1,6-Dinitropyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.0004 | ug/L | 10 |
| 1,8-Dinitropyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.004 | ug/L | 1 |
| Fluoranthene | Toxicity | USEPA IRIS Reference Dose (i) | 280 | ug/L | |
| Fluorene | Toxicity | USEPA IRIS Reference Dose (i) | 280 | ug/L | |
| Indeno(1,2,3-c,d)pyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| 3-Methylcholanthrene | Toxicity | Cal/EPA Cancer Potency Factor (c) | 0.0016 | ug/L | |
| 5-Methylchrysene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.004 | ug/L | 1 |
| 2-Methylnaphthalene | Toxicity | USEPA IRIS Reference Dose (i) | 28 | ug/L | |
| Naphthalene | Toxicity | California DHS Action Level in drinking water | 170 | ug/L | |
| | Tastes and Odors | Amoore and Hautala, J. Applied Tox., Vol.3, No.6, 1983 | 21 | ug/L | |
| 5-Nitroacenaphthene | Toxicity | Cal/EPA Cancer Potency Factor (c) | 0.27 | ug/L | |
| 6-Nitrocrysene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.0004 | ug/L | 10 |
| 2-Nitrofluorene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.4 | ug/L | 0.01 |
| 1-Nitropyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| 4-Nitropyrene | Toxicity | Public Health Goal for benzo(a)pyrene & OEHHHA PEFs | 0.04 | ug/L | 0.1 |
| Pyrene | Toxicity | USEPA IRIS Reference Dose (i) | 210 | ug/L | |

Notes for Table 1:

- (a) Water Quality Objectives for groundwater from the *Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin*, Fourth Edition. Similar language is found in the Tulare Lake Basin Plan.

Chemical Constituents

Ground waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses.

At a minimum, ground waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs) specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Tables 64431-A (Inorganic Chemicals) and 64431-B (Fluoride) of Section 64431, Table 64444-A (Organic Chemicals) of Section 64444, and Tables 64449-A (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits) and 64449-B (Secondary Maximum Contaminant Levels-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. At a minimum, water designated for use as domestic or municipal supply (MUN) shall not contain lead in excess of 0.015 mg/l. To protect all beneficial uses, the Regional Water Board may apply limits more stringent than MCLs.

Toxicity

Ground waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial use(s). This objective applies regardless of whether the toxicity is caused by a single substance or the interactive effect of multiple substances.

Tastes and Odors

Ground waters shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses.

- (b) Primary MCLs are human health based, but also may reflect other factors relating to technologic and economic feasibility of attainment and monitoring in a water distribution system and at the tap. These factors may not be relevant for the water resource.
- (c) 1-in-a-million cancer risk estimate derived from published oral cancer slope factor by assuming 2 liters/day water consumption and 70 kg body weight.
- (d) If adopted as proposed, this limit would become the numerical limit used to interpret this objective.
- (e) Health advisory = 4000 ug/L for 10 day exposure or less. No lifetime exposure advisory has been developed. However, lifetime health advisories are normally at least ten-fold lower than 10-day advisories. Therefore, a level of 400 ug/L would be a reasonable estimate of a lifetime protective level.
- (f) Secondary MCLs are human welfare based, but also may reflect other factors relating to technologic and economic feasibility of attainment and monitoring in a water distribution system and at the tap. These factors may not be relevant for the water resource.
- (g) Value listed is for 1,3,5-trimethylbenzene. Taste and odor threshold should be similar for 1,2,4-trimethylbenzene.
- (h) Liability under Proposition 65 may also exist for responsible parties where levels in water exceed 0.25 ug/L.
- (i) Listed value assumes 2 liters/day water consumption, 70 kg body weight, and 20% relative source contribution from drinking water.
- (j) Concentrations of individual PAHs are adjusted by dividing the concentrations by the potency equivalency factors (PEFs) in the table on the following page. The limit applies to the sum of these adjusted concentrations.

- * For definitions of terms and acronyms used in Table 1, please see the staff report, *A Complication of Water Quality Goals*, available on the internet at http://www.swrcb.ca.gov/rwqcb5/available_documents/wq_goals pages 9 to 13.

3.3 Quarterly Status Report- §2652(d)

Dischargers, UST operators, or permittees are to report at least quarterly to the Regional Board and LIA until investigation and cleanup of the site is deemed adequate (more frequent reporting may be required by the Lead Agency. These reports are to include the following minimum information:

1. A description of the groundwater sampling event, including field logs. Field logs shall contain depth to water, method of purging, water quality parameters, volume of water purged, site conditions, and any changes noted in the condition of the well and/or water quality data.
2. A table(s) listing all monitoring well details including: well number, date installed, casing diameter, casing material, slot size, surveyed elevation, reference elevation, screen interval, filter pack interval, and aquifer zone.
3. Cumulative data tables containing all soil and groundwater analytical results, reporting limits, depth to groundwater, groundwater elevations and Analytical Laboratory.
4. Groundwater elevation maps for appropriate water bearing units, as applicable. If the site is in remediation with groundwater pump and treat operations, define the zone of capture for any extraction well(s) on the contour map.
5. A groundwater flow diagram showing historical flow directions and gradients (Rose Diagrams).
6. Isoconcentration contour maps for petroleum products and constituents in appropriate water bearing units, as applicable.
7. A printed copy of the laboratory analytical data report. Water samples are to be analyzed for the appropriate minimum verification analyses specified in Table

#2, (below) unless otherwise directed by the lead regulatory agency.

8. Status and timelines of investigation and cleanup activities including the results of all investigations implemented or proposed to date.
9. If applicable, the status of any ongoing remediation, including operational data on the mass of contaminant removed from the subsurface, system operating time, the effectiveness of the remediation system, and any field notes pertaining to the operation and maintenance of the system.
10. Method of disposal of any contaminated soil or water, and manifests for transport of all hazardous substances.
11. Applicable conclusions and recommendations. For example, if the existing monitoring well network does not define the lateral and vertical extent of groundwater degradation, the discharger is to submit a proposal and workplan to complete additional work as needed to define the extent.

Once a year, preferably following the fourth quarter monitoring that includes one complete hydrologic cycle; the quarterly report is to include the following additional information:

1. A description of all remedial activities conducted during the year, periodic and cumulative removal rates, an analysis of system effectiveness and operational schedule, and plans to optimize remediation system effectiveness, if appropriate.
2. An analysis of whether the contaminant plume is being remediated effectively, or is continuing to migrate.

**TABLE #2 RECOMMENDED MINIMUM VERIFICATION ANALYSES
FOR UNDERGROUND STORAGE TANK INVESTIGATIONS**
(See explanation on following page.)

| Tank Contents (Carbon Range) | Gasoline by 8015M or 8260B | Diesel by 8015M | BTEX by 8021B or 8260B | VOCs by 8260B ⁽¹⁾ | Semi-VOCs by 8270C ⁽²⁾ | Oil & Grease by 1664A | PCBs by 8082 | Total Lead by 7421 | Title 22 Metals ⁽³⁾ |
|---|----------------------------|-----------------|------------------------|------------------------------|-----------------------------------|-----------------------|--------------|--------------------|--------------------------------|
| Unknown Fuel (C4-C36) | X | X | | X | | | | X | |
| Gasoline (C4-C20) | X | | | X | | | | X | |
| Diesel (C10-C36) | | X | X | X | | | | | |
| Jet Fuel/Kerosene (C9-C20) | | X | X | | | | | | |
| Heating Oil (C10-C32) | | X | X | | | | | | |
| Stoddard Solvent (C8-C20) (Non-Chlorinated) | | X | | X | | | | | |
| Chlorinated Solvents | | | | X | X | | | | |
| Waste Oil or Unknown Contents | X | X | | X | X | X | X | | X |

Notes:

1. EPA Method 8260B analyses must include all analytes listed in the method plus fuel oxygenates methyl-tertiary-butyl ether (MTBE), diisopropyl ether (DIPE), ethyl-tertiary-butyl ether (EtBE), tertiary-amyl-methyl ether (TAME), tertiary-butanol (TBA), methanol and ethanol and fuel additives 1,2-dichloroethane (1,2-DCA) and ethylene dibromide (EDB or 1,2-dibromoethane).
2. If pentachlorophenol (PCP) is identified, analyze the soil and/or water sample for dioxins and furans by EPA Method 8290 and pesticides by EPA Method 8081A.
3. Method 6010B may be used for all but the following metals, for which individual AA methods are required: Antimony & Arsenic by 7062, Cadmium by 7131A, Lead by 7421, Mercury by 7471A, Nickel by 7521, Selenium by 7742, and Thallium by 7841.
4. Non-proprietary, performance based analytical methods may be used with approval of Regional Board staff

Explanation for TABLE #2: MINIMUM VERIFICATION ANALYSES

1. As other methodologies are developed and accepted by the USEPA and the DHS, they may also be used if they have equal or better performance than the listed methods.
2. For drinking water sources, USEPA and DHS recommend that the 500 series methods for volatile organics be used in preference to the 8000-wastewater series methods due to lower detection limits and superior laboratory QA/QC. The 500 series currently comparable to Method 8260B is Method 524.2.
3. Appropriate analyses are to be used for detection of leaking tank contents. For example, there may be multiple fuels dispensed from the individual tank over its active life. Regulators must determine if the UST was used for multiple fuels, and require the appropriate analyses.
4. Total Petroleum Hydrocarbons as gasoline (TPHg) and diesel (TPHd) ranges (volatile and extractible, respectively) are to be analyzed and characterized by GC/FID with a fused capillary column and prepared by EPA method 5030 (purge and trap) for volatile hydrocarbons, or extracted by sonication using Method 3550 for extractible hydrocarbons. Fused capillary columns are preferred to packed columns; a packed column may be used as a "first cut" with "dirty" samples or once the hydrocarbons have been characterized and proper QA/QC is followed.
5. Silica gel cleanup of TPHg and TPHd samples to remove weathered hydrocarbons or breakdown products is not acceptable, as these compounds removed may contribute to impairment of beneficial uses of water through adverse taste and odor and/or toxicity. If natural background compounds are suspected to be contributing to high TPH concentrations that are not associated with the petroleum hydrocarbon release, comparison with samples from background locations, out of the influence of the petroleum hydrocarbon release may be used to justify adjusting TPH concentrations.
6. Tetraethyl lead analysis may be requested if the total lead concentration exceeds the naturally occurring (or background) concentration for lead.
7. Oil and Grease (O & G) analysis may be requested when heavy, straight chain hydrocarbons are present. As of 1 January 2002, US EPA requires O & G analysis by EPA Method 1664A.
8. Practical Quantitation Limits (PQLs), also called Reporting Limit by many laboratories, are influenced by analytical method selection, matrix problems and laboratory QA/QC procedures. The PQLs shall be equal to or lower than the detection limits (DLRs) for purposes of reporting published by DHS (<http://www.dhs.ca.gov/ps/dsdwem/chemicals/DLR/dlindex.htm>) or the minimum levels (MLs) published by the State Water Resources Control Board in Appendix 4 of the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (<http://www.swrcb.ca.gov/iswp/index.html>), which ever is lower. When such PQLs are not achievable, an explanation must be submitted on the laboratory data sheets.
9. PQL chain-of-custody and the signed laboratory data sheets are to be submitted containing the laboratory's assessment of the condition of the samples on receipt including temperature, suitable container type, air bubbles present/absent in VOA bottles, proper preservation, appropriate holding time, etc. The sheets must also include the dates sampled, submitted, prepared for analysis, and analyzed.

10. PEAKS THAT DO NOT CONFORM to the standards must be reported by the laboratories, including any unknown complex mixtures that elute at times which vary from the standards. These mixtures may not compare to the standards and may not be readily identified; however, they are to be reported. At the discretion of the LIA or the Regional Board the following information is to be contained in the laboratory report:

- The relative retention time for the unknown peak(s) relative to the reference peak in the standard;
- Copies of the chromatogram(s);
- Type of column used;
- Initial temperature;
- Temperature program in degrees Celsius per minute; and
- Final temperature.

3. Hydrographs and plots of chemical concentrations versus time for each monitoring well that has had detectable levels of contaminants.
4. An estimate of the quantity of contaminants remaining in soil and groundwater.
5. The anticipated date for completion of cleanup activities.
6. An identification of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
7. A proposal and rationale for any necessary revisions to the groundwater sampling plan and/or list of analytes.

4.0 CORRECTIVE ACTION PLAN (CAP) **-§2725**

Once the lateral and vertical extent of soil and groundwater degradation is defined, the discharger is to proceed with the CAP. The CAP is separated into the Problem Assessment Report (PAR), the Feasibility Study (FS), and the Final Remediation Plan (FRP). At every step of the CAP, the lead regulatory agency will review submitted documentation, and direct the discharger to proceed with proposed actions, or modify these actions to meet regulatory compliance for protection of water resources, health and safety, and sensitive ecological receptors until the FRP is successfully implemented and no further action is required at the site.

4.1 Problem Assessment Report (PAR)

The PAR summarizes the PIER and all additional investigations that characterize the site. The PAR should include sufficient detail on the nature and extent of the contamination to provide a basis for future decisions regarding subsequent cleanup and abatement actions. The discharger is to propose site-specific cleanup goals, and identify available remedial alternatives that have a substantial likelihood to achieve cleanup goals and objectives.

Investigations and characterization activities are to be presented accurately in the PAR, and should include the following minimum information:

- The depth and extent of free product found, including an estimate of volume removed and volume remaining.
- Figures delineating lateral and vertical extent of soil contamination, groundwater degradation plume(s), and vapor plumes as appropriate.
- Tables summarizing analytical data such as compound concentrations found in soil and groundwater, and sample depth.
- An evaluation of the physical and chemical characteristics of the hazardous substance or its constituents, including its toxicity, persistence and potential for migration in water, soil, and air.
- An estimate of the mass of contaminants remaining in soil and groundwater.
- Identification of applicable cleanup levels for affected or threatened groundwater and surface water, and a rationale for selecting these levels.

Note: Cleanup levels for leaking underground storage tanks sites are based on regulatory requirements as presented in *State Water Board Resolution 92-49, Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under California Water Code Section 13304, and Water Quality Control Plans of the Central Valley Region, including "Policy for Investigation and Cleanup of Contaminated Sites."*

- Cross sections based upon boreholes, monitoring wells, trenches, and supporting geological mapping logs.
- A site map showing sensitive receptors

(i.e.) local water supply wells, buildings or utilities impacted or potentially threatened).

- A risk assessment will be necessary to demonstrate that the site poses no unacceptable risks to human health or the environment. The site-specific risk assessment must use the Office of Environmental Health Hazard (OEHHA) toxicity data (cancer slopes). This information may streamline the consideration of remedial alternatives and the timeline for implementation.
- Appropriate conclusions and recommendations for the next phase of work.
- An updated Site Conceptual Model illustrating site conditions showing the extent of known soil and groundwater impact relative to the leaking UST system and the relationship between contaminants and potential receptors. (See Figure 1 below for an example).

4.2 Feasibility Study (FS) Report

The FS Report provides a summary of remedial alternatives evaluated to address applicable cleanup levels for affected or threatened human health and/or waters of the State. The FS Report must include a cost evaluation for at least two remedial alternatives and a recommendation for the preferred remedial action. The FS should identify the preferred remedial technologies and may recommend pilot testing of the selected remedial technologies before full-scale design.

The FS Report is to include the following minimum information:

1. An evaluation of remedial alternatives that have a substantial likelihood to achieve cleanup of all impacted soils and/or soils and groundwater. At a minimum, two of the following technologies must be evaluated for implementability, cost and effectiveness, (other technologies not listed may also be evaluated):

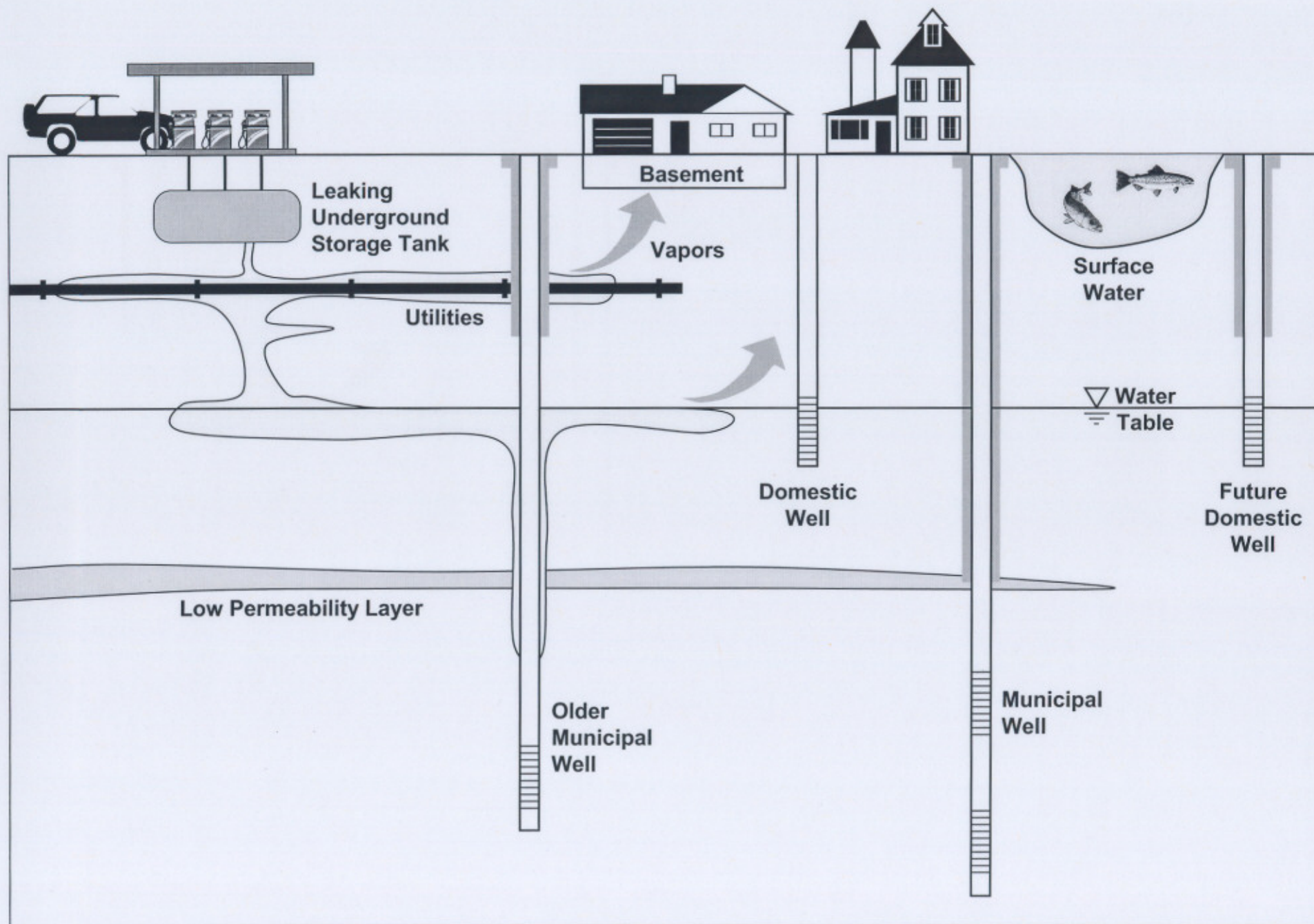
- Excavation;
- Soil vapor extraction;
- Bioventing;
- Bioremediation (bio barriers);
- Groundwater extraction and treatment;
- Biosparging;
- In-situ oxidation;
- Dual-phase extraction and treatment and
- Monitored natural attenuation.

2. The rationale for selecting the preferred remedial alternative for restoring and protecting impacted or threatened waters.
3. A timeframe for achieving remedial goals.
4. A cost comparison for remedial alternatives evaluated.

With minimal investigation and explanation, some remedial alternatives may be eliminated as simply not feasible for the site. For instance, soil vapor extraction is practical in sandy soils but difficult to justify for tighter clay soils where excavation and landfill disposal may be more effective in meeting cleanup levels.

Note: If the proposed alternatives include either soil disposal to a landfill, groundwater discharge to the sanitary sewer, or venting vapor to the atmosphere, etc., the discharger must include assurances from each appropriate regulating agency that the proposed activity is acceptable and permissible.

A General Site Conceptual Model



5. Disposal methods requiring either the Regional Board's General Permit for discharge to surface water (NPDES) or land (WDRs) may be evaluated. Selection of this type of disposal requires the responsible party to submit an application and supporting documentation in a timely manner. (See Region 5 Web page).

4.3 Final Remediation Plan (FRP)

The FRP is a corrective action implementation plan with detailed plans of the approved remedial system to be installed, and a proposed schedule for system construction and startup.

The FRP is to include the following minimum information:

- A description of the remedial technology approved by the LIA and/or Regional Board.
- A listing of the approved cleanup levels from the PAR, and predicted timeframe to meet these cleanup levels using the selected remedial alternative.
- Detailed plans for installation of the approved remedial alternative, such as soil to be excavated, layout of the soil vapor extraction system, air sparge injection points, the number and placement of remedial wells and associated equipment, the proposed pumping rate, disposal of wastes, etc.
- A discussion of implementation, including a phased schedule for construction and system startup.
- Operation and maintenance procedures, tests, and schedules including startup, long-term monitoring program for influent and effluent concentrations and periodic evaluation of the need for system optimization.

Should delays occur or time extensions be needed, such requests, with supporting documentation, are to be submitted by letter to the LIA and/or Regional Board.

5.0 VERIFICATION MONITORING-\$2727

Verification monitoring includes all activities required to verify implementation of the CAP and evaluate its effectiveness. The discharger shall verify successful completion of the CAP through sampling or other monitoring of soil and/or groundwater for a period of time determined by the lead agency to demonstrate that seasonal groundwater fluctuations will not mobilize any remaining contamination in quantities sufficient to degrade water quality and that rebound of contaminant concentrations will be insignificant. Using the monitoring results obtained during this period, the discharger shall evaluate the effectiveness of corrective actions at the site.

6.0 NO FURTHER ACTION REQUIRED (NFAR) REPORTING

All regulatory agencies, including the Regional Board, are required to issue a standard Case NFAR letter when closure is appropriate. That letter is described in Section 25296.10(g) of the Health and Safety Code. The purpose for a NFAR report is to provide a document upon which the regulator may make an objective decision regarding a request by the responsible party for site NFAR when contaminants remain but are no longer considered to be a significant risk. (See Disclaimer, page 2). In general, Regional Board staff approve NFAR requests when risks to public health and safety and ecological receptors are reduced to insignificant levels and:

1. Groundwater quality/beneficial uses are not threatened by soil contamination, and chemical contaminants in groundwater have been remediated to non-detectable levels, or
2. Groundwater contains detectable contaminants below water quality objectives and concentrations are expected to reach background conditions through natural processes within a reasonable period of time, or
3. Groundwater contains contaminants above water quality objectives, where best avail-

able, cost-effective technology has been implemented and chemical concentrations in groundwater are projected to meet water quality objectives through natural processes within a reasonable period of time, i.e., prior to any potential future beneficial use of groundwater. Patterns of existing and projected future demands for usable water resources in the area must be considered in determining what period of time is reasonable.

Regional Board staff recognize that the total cleanup of a site, although possible, is not always technically or economically feasible. Therefore, a NFAR designation for a UST site may be considered if the source has been removed and analysis of the groundwater concentration trends indicates the chemical plume is reducing in size, such that compliance with water quality objectives will be achieved within a reasonable period.

6.1 NFAR Process

When Regional Board or LIA staff concur that the petroleum source is removed or remediated, risks to public health and safety and ecological receptors are reduced to insignificant levels, and groundwater has been cleaned up to levels protective of existing and future beneficial uses, no further action is appropriate for a site.

At this point, the discharger will be requested to submit a closure report to the lead agency and the Regional Board with a formal request for no further action at the subject site. The discharger must also certify in writing a complete list of all record fee title owners to the Regional or LIA. Once the lead agency has reviewed the closure report and the NFAR request, and determines that the NFAR report substantiates the request for closure, Regional Board or LIA staff will notify all current record owners of fee title to the site of the determination that no further corrective action is required. The lead agency will request monitoring wells and remedial systems are properly destroyed, transferred or maintained under City/County approved permit. A NFAR letter will be issued once verification of proper well destruction/equipment removal is received.

A NFAR letter indicates that the discharger is no longer required to conduct active remediation, monitoring, or reporting work at the site unless new information indicates the presence of previously unknown water quality impacts or threats to health, safety or sensitive ecological receptors or that prior site characterization is shown to have been misrepresented.

6.2 Case Evaluation

The following recommendations in sections 6.3, 6.4 and 6.5 below apply only to sites contaminated with petroleum hydrocarbon fuels, (i.e., gasoline, diesel, kerosene, stoddard solvent, mineral spirits, fuel oil, aviation fuel mixtures and their additives), and should not be used for release cases involving chlorinated solvents, metals or other types of contaminants.

Each site is evaluated on a case-by-case basis to determine if it is a "low risk" site. (A site may be considered a low risk site by definition, or achieve a low risk status by site remediation.) For each site, complete characterization is required to determine the lateral and vertical extent of contamination, the risk to human health and safety and the environment (including the unsaturated zone, groundwater, and surface water), and the impacts on or threats to existing and potential future beneficial uses of water resources. The discharger must demonstrate that the selected remedial measure(s) are effective, and site monitoring must show that the remedial measure(s) applied by the discharger has a high probability to reduce or remove the petroleum hydrocarbons to acceptable levels within a reasonable period.

6.3 NFAR Criteria for Low Risk Vadose Zone Cases

Vadose zone cases are those sites for which documentation has been provided to demonstrate that fuel hydrocarbons or additives have not reached and are not expected to reach groundwater. If site conditions do not meet the criteria below, then additional remediation may be required. All of the following must be demonstrated in order to designate a vadose zone site as "low risk".

1. The release has been stopped and the source of contamination has been removed or remediated. Soil that contains mobile constituents in concentrations that threaten to degrade water quality or result in a significant risk to human health and safety or the environment (as determined by site specific data, or as concluded using appropriate mathematical models) should be considered a source.
2. The site has been adequately characterized. The vertical and lateral extent of subsurface impact must be defined to the degree that it is necessary to evaluate whether the site currently poses, or in the future may pose, a significant threat to human health and safety, waters of the State, or other nearby sensitive receptors. The level of detail required at a given site will depend on the contaminants of concern, the types of potential receptors and exposure pathways, and the proximity of the potential receptors. Groundwater beneath a site and adjacent surface waters are to be considered as receptors.
3. No waters of the State, or other sensitive receptors are likely to be impacted. Waters of the State include all groundwater and surface water regardless of current use. Central Valley aquifers generally are not segregated into discrete units, but are subject to vertical and horizontal migration of water (either by natural or man-induced mechanisms) and any pollutants carried by or in the water may degrade the waters of the State. Groundwater sample(s) are

required in all cases unless it can be shown that the collection of such sampling is unreasonable or unattainable, (e.g., the estimated depth to water is greater than 100 feet below the deepest soil impacts).

6.4 NFAR for Cases Above Background Groundwater Conditions

Ideally, the goal of remediation is to ensure that contaminants are cleaned up to background water quality. However, contaminants may be allowed to remain in the groundwater above background levels in certain cases. Any proposal to leave contaminants in groundwater at levels above background must include justification for such degradation. Cleanup levels above background must also conform to all applicable state policies, regulations and procedures. See *Policy for Investigation and Cleanup of Contaminated Sites* in Chapter IV of the Water Quality Control Plans (Basin Plans) for the Central Valley Region.

Central Valley Regional Water Quality Control Board staff have closed UST cases that do not meet background water quality levels, but the water quality objectives at the site are met, or will be met within a reasonable timeframe. In most of these instances, concentrations of pollutants were either below or close to applicable water quality objectives prior to closure.

Cases that have been closed above background levels in groundwater were deemed to be low risks to other receptors such as surface water and drinking water wells. Regional Board staff considers the following low risk factors when making this determination:

1. The source of the UST release has been identified and removed.
2. Free-phase product in groundwater has been removed to the full extent practicable, in accordance with the UST Regulations (Title 23, CCR, Section 2655).
3. Contaminants remaining in the vadose zone cannot migrate in soil vapor or leach at concentrations that would cause

groundwater to exceed water quality objectives.

4. There are no existing water supply wells, surface waters or other receptors threatened by the remaining contaminants in soil or groundwater.
5. Pollutants remaining in groundwater do not create or threaten to create risk to human health and safety, or to future beneficial use(s) of the groundwater. Patterns of existing and future demands for usable water resources in the area must be considered in determining what period of time is reasonable to reach non-detectable (or background) concentrates.
6. The plume size is stable and sufficiently limited in lateral and vertical extent and contaminant concentrations detected in groundwater show a decreasing trend with time. One hydrologic cycle (four quarters) of monitoring after active remediation measures have ceased is usually considered to be the minimum necessary to determine site groundwater and plume conditions.

Issuing NFAR letters for low risk cases is consistent with State regulations and policies. The practice of closing low risk cases is also consistent with the actions taken by the State Water Resources Control Board and Regional Boards throughout the State.

6.5 NFAR for Cases Exceeding Water Quality Objectives

The Regional Board and LIA staff are receiving more requests each year from UST owners or operators to grant closure of UST cases where groundwater has not attained water quality objectives. The responsible parties believe that they have implemented reasonable cleanup and abatement at these sites and that it is no longer technologically or economically feasible to continue corrective actions and monitoring.

A common example is when remedial actions have reduced groundwater contaminants by a large percentage, but constituents still exceed

water quality objectives. This may occur at sites where hard to reach soil contamination remains beneath building foundations, and the contamination continues to leach to groundwater. In these difficult cases, responsible parties may argue that the incremental cost for further mass removal exceeds the incremental benefit.

Regional Board staff believe that in some cases it is reasonable to issue a NFAR letter for sites that do not meet water quality objectives but present a low risk and are expected to meet water quality objectives in the near future. To receive such case closure, responsible parties need to demonstrate that site contaminants are degrading, and that site contaminants will reduce to levels protective of beneficial uses in a reasonable period of time.

Numerical water quality limits for petroleum fuel mixtures, constituents and additives, consistent with applicable water quality objectives, are available in the following staff document *Beneficial Use-Protective Water Quality Limits for Components of Petroleum-Based Fuels*. This document is updated regularly and available on the Regional Board website at: http://www.swrcb.ca.gov/rwqcb5/available_documents/index.html#WaterQualityGoals.

Board staff are currently requiring the following information to support requests to issue a NFAR letter at UST sites with contaminant concentrations above water quality objectives:

1. Demonstration that the plume is stable with either an overall annual decrease in size or an annual decrease in contaminant concentration trend.
2. Calculations or modeling results, including monitoring verification of model conclusions, which show when water quality objectives are predicted to be achieved.
3. Verification that there are no current or anticipated uses of the impaired water within the timeframe projected to meet water quality objectives. Institutional controls may be needed to prevent such use if this period is not sufficiently short.

6.6 NFAR Documentation

The purpose for a NFAR request report is to provide a document upon which the regulator may make an objective decision regarding the requested closure. At a minimum, the NFAR request must include the information outlined below. Responsible parties are to provide a one or two sentence narrative summary for each numbered item below, and list the section number where supporting information can be found in the NFAR request. Additional information submitted, such as fate and transport modeling, must include the assumptions and variables used. The NFAR request must include signatures of registered professionals as required by the California Business and Professions Code.

1. Site history and current site conditions.
2. Site geology and hydrogeology.
3. Sensitive potential receptors including water supply wells and surface water.
4. Provide a map showing the location of all water supply wells used for municipal, domestic, agriculture, industrial and other uses within 2,000 feet of the site. Provide well details and distances in a table.
5. Provide scaled site maps of the area impacted showing locations of former and existing tank systems, excavation and sample locations, boring and monitoring well locations, groundwater elevation contours, subsurface utilities, buildings, streets, and any nearby surface waters.
6. Provide boring logs and cross-sections to show site lithology.
7. Report the volume of excavated soil disposed off-site, or remaining on-site.
8. Describe the fate of any remaining monitoring and remediation wells (destroyed, ownership transferred, or to remain in use).
9. Provide tabulated results of all groundwater elevations and depths to water.
10. Provide tabulated results of all sample analyses, including the sampling method and detection limits. Analytical results must include TPH and BTEX constituents, lead, MtBE, EtBE, TBA, ETBE, DIPE, TAME, ethanol, methanol, ethylene dibromide, 1,2-dichloroethane and other constituents as indicated in Table #2 above. Provide any WET or TCLP results.
11. Discuss concentration and mass changes over time, and current concentrations of contaminants remaining in groundwater at the site.
12. Provide isoconcentration contour maps of contaminants of concern to define the lateral and vertical extent of contaminants remaining in soil and groundwater. The contour maps should present an estimated "zero line" of contaminant concentrations both on-site and off-site.
13. Provide a summary of the remedial method(s) used to clean up the site. Include the calculated zone of influence, assumptions used to design the remedial system(s), and the duration of remedial activities.
14. Provide a discussion of whether background is unattainable using best available remediation method(s).
15. Provide a discussion (and estimate) of contaminant mass remaining in soil and groundwater versus contaminant mass removed or destroyed by soil excavation or remedial actions.
16. Provide assumptions, parameters, calculations and the model used in any risk assessments.
17. Provide assumptions, parameters, calculations and the model used in fate and transport modeling.

18. Provide a rationale why the conditions remaining at the site will not adversely impact water quality, human health, and safety, or other beneficial uses. The rationale for NFAR must include a finding about present and future water use, and risks the site may still represent to human health and safety, and water quality.
19. Provide a list of technical reports submitted for site assessment, corrective action, confirmation sampling, and closure.

20. Provide any additional comments supporting site NFAR.

When the lead agency determines that the closure report substantiates the closure request, remedial and monitoring activities may cease. A request to destroy monitoring and remedial wells will be issued, and upon verification of proper well destruction, transfer of ownership, or other lead agency approved use, Board or LIA staff will issue a NFAR letter for the site.

DISCLAIMER

The NFAR letter does not relieve the tank owner of any responsibilities mandated under the California Health and Safety Code and California Water Code if existing, additional, or previously unidentified contamination at the site causes or threatens to cause pollution or nuisance or is found to pose a threat to public health or water quality. Changes in land use may require further assessment and possible mitigation.

ACROMYMS
(As used in Appendix A)

| | |
|---------|--|
| CAL EPA | California Environmental Protection Agency |
| CAP | Corrective Action Plan |
| CCR | California Code of Regulations |
| DHS | Department of Health Services |
| DLR | Detection Limits Reportable |
| FRP | Final Remediation Plan |
| FS | Feasibility Study |
| GCFID | Gas Chromatography - Flame Ionization Detector |
| H&SC | Health & Safety Code |
| IRIS | Integrated Risk Information System - US EPA |
| LIA | Local Implementing Agency |
| LOP | Local Oversight Program (An LIA Receiving SWRCB funds) |
| LUFT | Leaking Underground Fuel Tank |
| LUST | Leaking Underground Storage Tank |
| MCL | Maximum Contaminant Level |
| MVA | Minimum Verification Analysis |
| NFAR | No Further Action Required |
| NPDES | National Pollutant Discharge Elimination System |
| OEHHA | Office of Environmental Health Hazard Assessment |
| PAH/PNA | Polynuclear Aromatic Hydrocarbon/Polynuclear Aromatic |
| PAR | Problem Assessment Report |
| PEF | Potency Equivalent Factors |
| PIER | Preliminary Investigation and Evaluation Report |
| PQL | Practical Quantitation Limit |
| QA/QC | Quality Assurance/Quality Control |
| RB | Regional Water Quality Control Board (Regional Board) |
| SWRCB | State Water Resources Control Board |
| TCLP | Total Concentrate Leachate Procedure |
| US EPA | United States Environmental Protection Agency |
| UST | Underground Storage Tank |
| VOA | Volatile Organic Analysis |
| WET | Waste Extraction Test |
| WDR | Waste Discharge Requirements |

**TABLE 1 - CHECKLIST OF REQUIRED DATA
FOR NO FURTHER ACTION REQUESTS AT UNDERGROUND TANK SITES**

| | |
|--------------------------|--|
| Site Name and Location: | |
| <input type="checkbox"/> | 1. Distance to production wells for municipal, domestic, agriculture, industry and other uses within 2000 feet of the site; |
| <input type="checkbox"/> | 2. Site maps, to scale, of area impacted showing locations of any former and existing tank systems, excavation contours and sample locations, boring and monitoring well elevation contours, gradients, and nearby surface waters, buildings, streets, and subsurface utilities; |
| <input type="checkbox"/> | 3. Figures depicting lithology (cross section), treatment system diagrams; |
| <input type="checkbox"/> | 4. Stockpiled soil remaining on-site or off-site disposal (quantity); |
| <input type="checkbox"/> | 5. Monitoring wells remaining on-site, fate; |
| <input type="checkbox"/> | 6. Tabulated results of all groundwater elevations and depths to water; |
| <input type="checkbox"/> | 7. Tabulated results of all sampling and analyses: <div style="margin-left: 20px;"><input type="checkbox"/> Detection limits for confirmation sampling <input type="checkbox"/> Lead analyses</div> |
| <input type="checkbox"/> | 8. Concentration contours of contaminants found and those remaining in soil and groundwater, and both on-site and off-site: <div style="margin-left: 20px;"><div style="display: inline-block; width: 45%;"><input type="checkbox"/> Lateral and</div><div style="display: inline-block; width: 45%;"><input type="checkbox"/> Vertical extent of soil contamination</div><div style="display: inline-block; width: 45%;"><input type="checkbox"/> Lateral and</div><div style="display: inline-block; width: 45%;"><input type="checkbox"/> Vertical extent of groundwater contamination</div></div> |
| <input type="checkbox"/> | 9. Zone of influence calculated and assumptions used for subsurface remediation system and the zone of capture attained for the soil and groundwater remediation system; |
| <input type="checkbox"/> | 10. Reports / information <input type="checkbox"/> Unauthorized Release Form <input type="checkbox"/> QMRs (Dates) <div style="margin-left: 20px;"><input type="checkbox"/> Well and boring logs <input type="checkbox"/> PAR <input type="checkbox"/> FRP <input type="checkbox"/> Other (report name)</div> |
| <input type="checkbox"/> | 11. Best Available Technology (BAT) used or an explanation for not using BAT; |
| <input type="checkbox"/> | 12. Reasons why background was/is unattainable using BAT; |
| <input type="checkbox"/> | 13. Mass balance calculation of substance treated versus that remaining; |
| <input type="checkbox"/> | 14. Assumptions, parameters, calculations and model used in risk assessments, and fate and transport modeling; |
| <input type="checkbox"/> | 15. Rationale why conditions remaining at site will not adversely impact water quality, health, or other beneficial uses; and |
| <input type="checkbox"/> | 16. WET or TCLP results |
| <input type="checkbox"/> | |
| By: | Comments: |
| Date: | |